

5. ‘Everything is protected now, but who protects the local people?’: local ecological knowledge of Kihnu Island

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INTRODUCTION

One of the greatest challenges of our time is halting the loss of biological diversity. The disappearance of species today is 100–1000 times faster than what could be considered natural. Thus, we have exceeded the tolerance limits of the Earth (Rockström et al., 2009). Despite the protection of both species and habitats in the European Union, the reduction of species diversity and the impoverishment of communities continues. One of the most regulated areas is the sea corridor, in which the protection of fish, seabirds and marine animals co-exists, as well as that of habitats of nature conservation importance, like nesting areas, fish spawning areas, and bird migration routes (European Environment Agency, 2020). Instead, nature conservation should be linked to the human communities living in a certain environment, and as Fikret Berkes and Carl Folke (1998, p. 4) state: ‘we hold the view that social and ecological systems are in fact linked, and that the delineation between social and natural systems is artificial and arbitrary’.

The Baltic Sea region is ecologically young, as humans began to colonize this area only after the end of the last Ice Age (about 15 000 years ago), and colonization continues to this day. The Baltic Sea is characterized by low salinity, shallow depths, semi-closure, and dense coastal human settlements with high human impact (Snøeijls-Leijonmalm & Andrén, 2017), which makes the knowledge of traditional human activities along the Baltic Sea unique and their preservation essential from the point of view of nature conservation. For example, semi-natural areas with a high natural value on the Estonian sea coast have been created as a result of low-intensity grazing and mowing and are today very important from the perspective of both flora and fauna (Young et al., 2007). Therefore, keeping the tradition of low-intensity grazing and mowing,

as well as other conservation-related human activities, on the coast is very necessary from the point of view of nature conservation. However, tradition means cultural diversity. Cultural diversity and biodiversity are interrelated, and thus biocultural diversity must be protected (Maffi & Woodley, 2012). Approaching conservation through the concept of *biocultural diversity* (see also Tynkkynen et al., Chapter 4 in this volume), keeping in mind the multiple relationships between flora and fauna and humans, is of utmost importance and needs to be carried out from a transdisciplinary perspective, involving not only different knowledge systems but also different scientific disciplines and those stakeholders whose lives and livelihoods are at stake.

This diversity is best protected by taking local ecological knowledge into account in decision-making and when regulating environmental protection, which currently is not always the case. Local ecological knowledge (LEK) is generated through a long-lasting and complex co-evolution of both the environment and social systems of a particular place, and it is never to be understood as a static corpus of knowledge and practices to be simply preserved as they are, but rather as an in-progress system of mutual interactions, which is essential for the sustainability/durability of a place, i.e., its nature and its people (Berkes, 1999; Berkström et al., 2019). In this chapter, we demonstrate how local ecological knowledge is being created and tied to practices related to fishing and fish consumption, grey seal hunting, and bird culture and bird egg foraging on the Estonian island of Kihnu. In addition, we show how nature conservation and cultural protection have moved in different directions when it comes to Kihnu, which was included in the representative list of the Intangible Cultural Heritage of Humanity by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2008 (see below).

Sea coasts are historically one of the most important locations of human settlements and have therefore been areas with the longest human influence. Thus, mutual relationships between man and nature have developed in these areas. With their location on the border of land and water, coastal people have interwoven knowledge of both terrestrial and sea environments. Given that the activities of coastal people affect a much larger area than just their own surroundings, the motto 'think globally, act locally', which has been guiding ecology and ethnobiology for decades, is especially relevant in such areas. For example, chemicals from fertilizers and plant protection products used in agriculture near the coast affect the marine environment much faster. Local and international restrictions have already been put in place for beach dwellers today, as fish, plant, animal, and bird species have been placed under protection: protected areas for the habitats of species have been established in large areas – the first protected area by the Baltic Sea was created in Estonia as early as 1910, fishing by coastal fishermen is regulated through a quota system, etc. So, the area of the west coast of Estonia, the location of the research reported

in this chapter, is not only important from the point of view of local natural diversity, but also closely related to Baltic Sea fish spawning areas and the migration corridor of migratory birds, and thus to the entire natural diversity of northern Europe. Consequently, local residents influence a much larger area with their behaviour. Centuries of human activity with its customs and practices have bestowed on us this richness of species in given locations. Therefore, if we preserve and protect species richness, we must also preserve local life along the coast. Maintaining social-ecological systems in these places is thus vital and it can even be stated that coastal farmland with high natural value can only be sustained with the protection of social-ecological systems (Herzon et al., 2021).

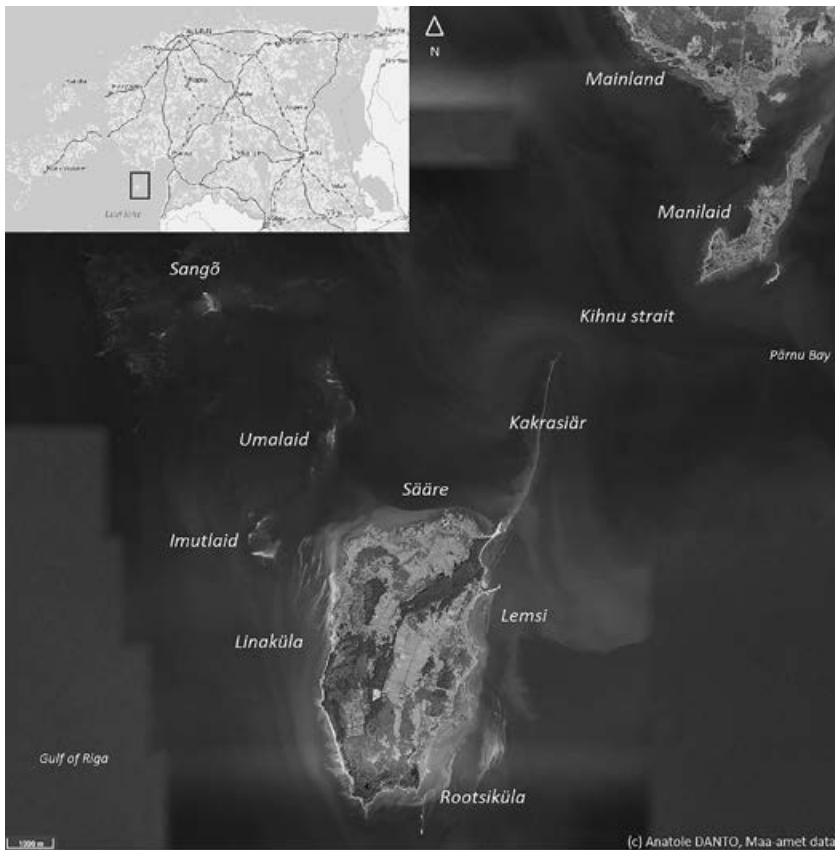
Kihnu Island, located off the west coast of Estonia (see Figure 5.1), provides an illustrative example of this challenge and of the importance of local ecological knowledge, as despite its connections with the mainland it has remained relatively isolated for a long time. In this chapter, we provide an overview of how locals on Kihnu perceive nature conservation restrictions, which are often top-down and challenge local customs and communities. Our aim is to showcase the importance of acknowledging that local communities do have sustainable solutions for preserving local life and the environment, especially in coastal communities which have been dependent on local resources for generations.

Our chapter is an ethnobiological study of local ecological knowledge on Kihnu Island. It is based on a semi-qualitative analysis of the data we collected on the island between 2015 and 2022.² We recorded the perceptions of Kihnu Island residents regarding nature, traditions, life, species protection, etc. We also conducted participant and floating observations, visited museums and carried out archival work.

BRIEF ENVIRONMENTAL AND HISTORICAL BACKGROUND OF KIHNU

The Kihnu area (Figure 5.1), which includes the island of Kihnu (16.4 km²), as well as the islets surrounding it and even, from a cultural point of view, the island of Manilaid (1.9 km²), is both a cultural and natural archipelago seascape located east of the Gulf of Riga. In the past, sheep breeding and dairy cow farming were common, but today, mostly beef cattle and sheep for meat are kept. The sheep landrace *Kihnu maalammas* is now endangered and protected (Rannamäe et al., 2020). There is no large-scale agriculture on the island, only small gardens.

The vegetation on the island mainly consists of semi-natural communities, planted pine forests (mostly owned by the state), and wetlands with reeds (which are very rich in water birds and sea birds). In the past, when there was



Source: © Anatole Danto, Maa-amet data.

Figure 5.1 Kihnu area

less forest cover on the island, forested areas were protected because they were a landmark for sailing ships. Because of the decrease in economic activity over the past 30 years, open areas have started to become overgrown and forested with deciduous trees (Meikar, 2009).

Kihnu Island is composed of four villages: Lemsi, Linaküla, Sääre, and Rootsiküla. Populated today with about 480 winter and about 700 summer residents, it experienced a demographic peak in the early 20th century, even leading 20 families to migrate to the neighbouring island of Manilaid in 1933. The language spoken locally is *Kihnu kiel*, but its use is now threatened, due to the decrease or even interruption of transmission of the local language. Its loss is part of the erosion of biocultural diversity underway in the region (Pertel

& Danto, 2022a). Numerous archaeological artifacts have been discovered during various excavations in the region, allowing us to recognize the strong relationships between local coastal communities and the sea, using food (hunting, fishing, etc.), as well as the permanent interrelations between coastal communities of the Baltic, through the exchange and circulation of goods and knowledge via ships. The island is located at the southern border (the Gulf of Riga) of the archipelago settlement of the coastal Swedish (*Estlandsvenska* – see Rosenkvist, 2018), who left several traces of their sojourn on the island, including toponyms.

Logically turned towards the sea, the island population has nevertheless not abandoned the land over the centuries. Faced with poor soils (peaty, poorly drained and acidic), a harsh climate, and frequent storms and floods, each food contribution was considered and valued. A real socio-economy, nearly self-sufficient, like on many other islands, was thus gradually established. Good navigators, the men of the island were trained in marine carpentry (a shipyard existed to the north of the current port) and served in the civil and military navies of the region. Even today, many men are commercial sailors. Using their boats, they traded throughout the region, selling moraine boulders or fish. The women remained on land and took care of the agricultural business: livestock farming, horticulture, etc. (Ia, 1962). The men who remained on the island became fishermen and seal hunters. The isolation, certainly relative but nonetheless present, allowed the island to play the role of conservator of certain traditions, which had also developed thanks to the insularity. For example, several festive traditions have been maintained: weddings, particular to Kihnu; *runic* songs (Kalevala-meter songs) practised during masses; and the practice of an orthodoxy adapted locally, sometimes calling upon ancient pre-Christian customs, dances, music, and songs (Rüütel, 2002). To accompany many of these social activities, which strengthen the community, traditional costumes, especially feminine ones, are still passed on today. Women's striped skirts of different colours – with each colour being adapted to a precise social context, for example, black or dark blue for a funeral ceremony – are still hand-woven on looms on the island (Lind, 2021). All these practices led the island to be included on the representative list of the Intangible Cultural Heritage of Humanity by UNESCO in 2008.³

Nearly 15 years after this classification, a controversy has emerged: even though the island initially benefited greatly from this new popularity, which led to local economic development, such as the opening of numerous homestays and campsites, it is now facing a questionably large influx of tourists, especially in the summer season, and the community suffers from mass tourism (Danto, 2018). The nuisance caused by the daily arrival of ferries loaded with tourists now exceeds the local economic benefits during the high season, and forms of regulation are being discussed.

At the same time, the second half of the 20th century saw changes in the island's traditional way of life, jeopardizing the local social, economic and environmental balance hitherto established. This phenomenon, obviously widely present in other coastal, mountainous, rural, and isolated territories in Europe (Danto, 2022; Pertel & Danto, 2022b), was accentuated locally with the fall of the Union of Soviet Socialist Republics (USSR) and integration into the market economy. The biggest change was the closure of the fish processing plant and dairy in 1990, which resulted in jobs disappearing and losing the opportunity to keep large numbers of dairy cows on the island. The vast majority of fishery products are now sold to the continent or consumed for subsistence. About 60 inhabitants still have a fishing licence, but few practise it year-round and rely solely on this profession. Seal hunting, meanwhile, has been reauthorized, but is now little practised (Danto et al., 2020). These economic changes have generated a major problem locally: the difficulty of maintaining traditions. Now too dependent on the mainland, the island faces a shortage of skilled labour for traditional livelihoods such as leather tanning, milk and wool processing, the processing of domestic animal meat, and the like. This leads to the need to outsource certain jobs, and, like a vicious circle, forces young people to emigrate to pursue their studies and practise the professions of their choice.

This current situation with traditional livelihoods has led to a profound reorganization of the governance of resource exploitation locally, with an accumulation of supranational and national regulations exogenous to the community, which have left locals feeling partly dispossessed of the management of the island's common goods in the way their traditions typically allow. Governance arenas have also largely mutated and deterritorialized, as they are now standardized on a national or even European scale. This means that they no longer match with the traditional geographies of the island. Consequently, several nature conservation measures have been enacted far from the island, without adaptation to the local socio-ecosystemic context and omitting local knowledge of the nature on the island.

FISH CULTURE AND REGULATION IN KIHNU

Fishing All Year Round

The waters around Kihnu are relatively shallow and fresh, which limits the species and abundance of fish. Due to a combination of several factors, the number of fish has decreased, and with it, the shore fishermen. At the end of Soviet occupation there were a dozen fishing 'brigades' (about seven men in each), but by 2022 there were only two remaining. These teams catch hundreds of tons of Baltic herring (*Clupea harengus membras*) and European sprat

(*Sprattus balticus*) in one season. These fish are caught in a special net box called a *kakuaam* (fyke) placed along the bottom of the sea (the shorter side being about 12 m), with two net fences (400–500 m) on the sides. This fishing gear (the *kakuaam*) was introduced into Kihnu after World War II, around 1948/1949, and is suitable for a sandy (rock-free) seabed with a slight slope. The net starts near the shore at a depth of about two meters and the fishing box is at a depth of either six, eight, nine, or twelve metres. The *kakuaam* is usually placed in the sea between 1 and 10 April and then remains in the water for two months until 10 June. For both placing and emptying the net box, two boats and up to seven fishermen are needed. Sprat and herring are sold to retailers. As mentioned, some fish were previously processed on site, but not anymore. Today there are only one or two remaining family businesses in Kihnu that process fish for sale in small quantities.

However, there are many more Kihnu people who have a boat and a licence to catch with a net. There are many small, more or less formal, landing points on the island, some small ports (called *lauter*) and a main port. The fishermen catch all that come into the net: in winter, more expensive, and thus profitable, fish such as northern pike (*Esox lucius*), Atlantic salmon (*Salmo salar*), European whitefish (*Coregonus lavaretus lavaretus*), and European perch (*Perca fluviatilis*) are caught with nets under the ice. There are also some cheaper fish like common roach (*Rutilus rutilus*), vimba (*Vimba vimba*), etc. Most brown trout (*Salmo trutta*) and northern pike are caught in the spring (March–April). Fishing for all these species continues in the summer and autumn. The catching of European flounder (*Platichthys flesus*) and Baltic flounder (*Platichthys solemdali*) begins in July–August, when they are fattest, but this fish is best in autumn. Whitefish and perch are considered the best fish in terms of taste and smoked European eel (*Anguilla anguilla*) is a traditional food for Midsummer Day. Eel was also an important income source in the past for the Kihnu people.

During the winter period, and when the ice pack is sufficient, ice fishing is practised, using long nets placed under the ice, by a system of traps and poles. The fishermen generally practise this fishery in groups of two or three fishermen. Global climate change has strongly affected this traditional fishing practice, which is sometimes impossible to carry out due to insufficient or the complete lack of ice, as occurs in other territories of the Baltic (Sonck-Rautio, 2018).

Cod, eel, and now also perch have decreased or disappeared altogether. A new species of round goby (*Neogobius melanostomus*) arrived about ten years ago. They are not eaten by the fishermen themselves, but they are caught and sold to Ukraine and Bulgaria. Garfish (*Belone belone*) are also caught now, although they were not caught or eaten before. They are caught in the spring during spawning, frozen, and then smoked in the summer.

The different species of fish are prepared in various different ways: they are boiled, fried, or more recently roasted, or grilled. Whitefish and vimba are also eaten raw, with a little salt (called *äkis*). They are cut into thin slices and eaten with white bread. These fish must be eaten on the day they are caught. Thus, whitefish and vimba are also eaten at sea while on a fishing boat or while fishing on the ice in winter. Vinegar-marinated foods such as filleted Baltic herring rolled with onion (*räimerull*), fried Baltic herring and European smelt are considered traditional holiday food. Zander (*Sander lucioperca*) were preserved in glass jars. In the past, fish were only preserved with salt in wooden barrels, and storage took place in semi-underground cellars located in gardens. Drying fish was not common in Kihnu. Now the most common method of storage is freezing (in the household freezer).



Source: photo by Renata Sõukand.

Figure 5.2 Freshly smoked garfish and flounder. June 2021, Linaküla village

Smoking fish for both personal consumption and for sale is now very popular (see Figure 5.2). Fresh fish (or fish thawed from the freezer) are salted for a couple of hours and then put into the oven on either a rack or hook. They are

mainly smoked using the hot smoke method, in which smaller fish are ready in just a couple of hours. European alder (*Alnus glutinosa*) wood is heated to produce smoke, and finally stinging nettle (*Urtica dioica*) is added for flavour. Homemade preserves are made from Atlantic cod (*Gadus morhua*) liver and eaten later, for example, as a salad with onions or on a sandwich. The eggs of pike and salmon are also harvested and salted, being left for up to a week. Now fish roe is also stored in the freezer. The innards of fish are fed to chickens at home or added as fertilizer to vegetable and berry gardens.

Regulations Compromising Traditional Fishing Culture

There are a lot of regulations and controls on fishing, and even the smallest infractions can incur fines, which are quite high. In Estonia today, fishing for fish and other aquatic animals is regulated by the Fishing Code, which was adopted in 2016⁴ and has been amended eight times to date. The protection of fish and aquatic plants is defined by the Fish Protection Act, which was also adopted in 2016⁵ and has been amended by legislation seven times since then. These national regulations are also made under the umbrella of the European framework of the Common Fisheries Policy (CFP) and European measures for species not managed by the CFP, particularly in terms of European public action dedicated to biodiversity, such as the Eel Management Plan, but also under Baltic Marine Environment Protection Commission (HELCOM) rules. The main regulatory actions are time–area measures, implying area closures or the closure of fishing periods within the fishing calendar. Salmon and trout fisheries in the sea are fully regulated and flounder fisheries are partially regulated by the European Parliament and Council. There are also restrictions that are incomprehensible to locals. For example, people wonder how someone can fish with a net so that other species of fish do not get caught in it. The fishing regulations specify the quantities and species of fish that may be caught and how many of these prohibited fish may be present in the catch when fishing for other fish species. Depending on the species and the type of fishing gear, they can represent two, five or eight per cent of the total weight of the other fish. The minimum percentage of fish that do not correspond to the allowed size can be one, two, five, or eight per cent of the total catch, depending on the fishing method and species. Minimum sizes below which fish may not be fished at sea are set for the following species: perch (19 cm), eel (35 cm), pike (45 cm), turbot (30 cm), zander (46 cm), flounder (21 cm, but elsewhere in the Gulf of Riga 18 cm), tench (*Tinca tinca*) (30 cm), bream (40 cm), salmon (60 cm), sea trout (50 cm), whitefish (35 cm), ide (*Leuciscus idus*) (38 cm), cod (35 cm), and vimba (30 cm). Likewise, fishing restrictions from 15 February to 15 May have been set for flounder, but, as we were told, at that time of year this fish is never caught because it is too small. Fishing for pike (from 15 March to 30

April), zander (from 15 May to 15 July), eel (from 1 November to 31 January) and whitefish around Ruhnu Island (from 25 October to 1 December) is still prohibited. In addition, a number of areas in the coastal waters where fishing is prohibited throughout the year are listed. The regulations prescribe the size of the net, the fishing season and the depth of the net for each type of fishing method.

There are also other illogical rules according to the locals: one of the most profitable fish, the perch, has no governmental restrictions at all on fishing during spawning. Therefore, Kihnu fishers adapt the restrictions themselves: they do not catch perch during spawning because that is when perch are also the cheapest. Perch start spawning when the water temperature has warmed up to 8–10°C, around mid April, and spawning continues until summer. The most suitable areas for spawning are rocky shorelines up to 1.5 metres deep (see Järv, 2001 for more). The low cost of perch is due to the high proportion of small fish and the low cost of harvesting due to oversupply. The other reason locals abstain from fishing during spawning is that they recognize the importance of sustainability – although the concept as such was not used in the modern scientific way, they nevertheless maintained the idea. Local inhabitants want to keep this precious fish close to the beach – the maritime border around the islets is considered by inhabitants as their garden where local islanders are allowed to fish, hunt, gather, and collect.

As we were told, today's fishing rights (nets and trawl permits) had been granted to every coastal fisherman individually after the collapse of the USSR and no new permits had been granted since. These fishing rights are handed down within the family from father to son and the owners have an interest in fish abundance. Fishing rights can be obtained by either buying or renting permits from other fishers. Thus, if a coastal fisherman leases or sells his fishing rights to a fisherman outside Kihnu, the leaseholder and the purchaser of the fishing rights in the sea will also acquire these fishing grounds, but as a rule they can fish on a larger scale and do not perceive the disappearance of fish on the local scale as painfully as the islanders. Market price affects catch the most, but if there are a lot of fish, the price is low and selling at cost is not worth the effort. When there are few fish, the price is much higher, and fishing makes more sense. There are no regulations or agreements between fishermen to reduce market price fluctuations. One local fisherman said: 'Young people don't want to become fishermen anymore. There is no stability, this income fluctuates a lot. You have to have fishing as a hobby and another job, then you don't care so much about this fluctuating income' (male, born 1956). Therefore, young people no longer want to become local fishermen and are going to merchant ships in search of better jobs. This trend is also due to the decrease in fish stocks in the sea, fishing restrictions and competition with big fishing companies in suitable fishing areas. In addition, during the time of the

Estonian Soviet Socialist Republic (Estonian SSR), the local collective farm and school encouraged young boys to go fishing during the summer holidays, a job for which they were paid. However, since the local collective farm joined the larger Pärnu fishing collective at the beginning of the 1970s, this practice has disappeared.

Besides nature conservation regulation, large colonies of great cormorant (*Phalacrocorax carbo*) have recently become a big problem for Kihnu fishermen. This bird came to nest on the coast of Kihnu for the first time about 20 years ago. Due to the favourable conditions and their non-appreciated game bird status, these bird colonies are now quite large. Local residents told us that up to 5000 birds can live in a single colony. This large bird eats at least half a kilogram of fish per day, although which fish this bird prefers has not yet been studied. However, it eats fish that are easy to catch, especially during the spawning season when they are in large shoals.

BIRD CULTURE AND BIRD EGG FORAGING IN KIHNU

The area around Kihnu Island is very rich in birds, which is why protected areas have been created for them.⁶ During our fieldwork, it became clear that people on Kihnu have a very intimate and caring attitude towards birds. Migratory birds are expected to come in the spring and are talked about as members of the village community. For example, people expect some birds to arrive and make nests next to buildings (swallow (*Hirundo rustica*)), white wagtail (*Motacilla alba*), common house martin (*Delichon urbica*), etc.), while for others nesting boxes are erected (common starling (*Sturnus vulgaris*), common swift (*Apus apus*), tit (*Parus* sp.), etc.). The weather is also predicted on the basis of bird behaviour: when the thrush nightingale starts singing, the nights will be warm; when swallows fly low, it will soon rain; when the Eurasian golden oriole (*Oriolus oriolus*) sings, it will rain; when seagulls (*Larus* sp.) come to the fields, there will be a storm, etc.

Today, Kihnu is one of the few places along the Baltic Sea where waterfowl are semi-domesticated for the purpose of collecting eggs. With this intention, special nesting boxes (Figure 5.3) are placed where goosander (*Mergus merganser*) (and, rarely, red-breasted merganser (*Mergus serrator*)) go to lay their eggs. Since this bird is a good egg-layer and often several mother birds lay eggs in one nest box, dozens of eggs can be collected from a single nest in a season. The goosander wants to live in a tree cavity, but since there are few such places in nature, human-placed nest boxes are the only way for them to nest on the island. As the goosander returns to the same place every year, if the nest box is gone, it is very difficult for it to find a new location. That is why several birds utilize the same nest box. Goosander eggs are fried, boiled,



Source: photo by Anatole Danto.

Figure 5.3 Nesting boxes. October 2018, Sääre village

and also made into a cake, like a local biscuit. There is an unwritten rule on the island that if someone collects many eggs in the spring, part of the yield is shared, often anonymously, with those members of the community that are not able to collect them themselves (mainly due to old age). There is a similar rule for the seal hunt, where half of the animals killed can be shared with hunters' widows.⁷

On Kihnu, it is also a customary rule that if you have not taken care of the birds, you do not have the right to forage waterfowl eggs. Although nature conservation prohibits the collection of bird eggs, the tradition of collecting bird eggs for food in the spring has been preserved on Kihnu. Today, eggs, mainly of various seagulls (*Larus* sp., mainly great black-backed gull (*Larus marinus*) common gull (*Larus canus*) and black-headed gull (*Chroicocephalus ridibundus*)) are collected, brought home and cooked. Thirty to forty years ago, the eggs of different meadow birds (northern lapwing (*Vanellus vanellus*), arctic tern (*Sterna paradisaea*), etc.) were also collected. The eggs of meadow birds were cooked in a pot on the fire while in the wild. The main reason why meadow bird eggs are no longer foraged today is the scarcity of these birds. Formerly, Kihnu was open and covered with semi-natural grasslands (hay meadows and pasture), but since the disappearance of livestock farming, these grassy areas have started to become overgrown and forested. With the disap-

pearance of domesticated animals, swallows and homing pigeons (*Columba livia domestica*) have also started to disappear. Here we see an example of self-regulation in the local community – the eggs of birds that have become rare are no longer collected. Today, it is forbidden to collect swans' (*Cygnus* sp.) eggs in the island community.

Islanders have always hunted birds while considering the evolution of bird populations and self-limiting their harvest under community management. Those with a shotgun and a permit have traditionally shot one or two game birds at a time for food for the family. Although the hunting season officially starts on 20 August and lasts until the end of November, hunting is still carried out from September, when migratory birds are at their fattest. Mallards (*Anas platyrhynchos*), northern shovelers (*Anas clypeata*), Eurasian wigeons (*Mareca penelope*) and Eurasian teals (*Anas crecca*) are primarily shot. Geese (*Anser* sp.) that stop in open meadows are also occasionally shot. Game birds are not usually preserved, although sometimes they are smoked.

In recent years, trophy hunting tourism has developed on the island, in which foreign hunters from southern Europe come to shoot hundreds and hundreds of seabirds at one time, targeting certain species that are not hunted locally or only at certain times, with no intention of consuming them afterwards. The islanders have made propositions to the Ministry, without success, because hunting regulations are national. The majority of locals have a negative attitude towards hunting tourism, as one local told us (female, born 1973): 'These birds are residents of Kihnu just like us. And those hunting tourists who come here would like to come to hunt us, with their guns. Anyway, I am very angry about this [hunting tourism] activity.'

GREY SEAL HUNTING ON KIHNU

The grey seal (*Halichoerus grypus*) is the largest mammal in the Baltic Sea (males can weigh up to 310 kg), and it has been hunted along the coast of Estonia for centuries. This hunting practice was preserved for the longest time on Kihnu and Ruhnu (Danto, 2018). However, when coastal Swedes, who historically lived on Ruhnu, emigrated back to Sweden during World War II, the practice of hunting this animal was mostly discontinued on the island, although there are still some hunters. Therefore, the continuity of hunting this animal was preserved only on Kihnu Island. However, in the early 1980s grey seal hunting was completely banned because of the decrease of the population due to environmental conditions and pollution.

During our fieldwork, we also asked locals about the importance of the grey seal in Kihnu culture and how this animal was used there. Seals have traditionally been hunted on ice in winter. The reason is that it is very difficult to catch this animal in the water or from the shore. When the seal is shot in the water,

the animal generally sinks, whereas along the shore it is difficult to approach the animal without it noticing and running away into the water. There was also a hunting practice later in the season, in the straits of Muhu Island, with captures by net. This practice has been terminated, and the hunting territory of the Kihnu people has been greatly reduced. It is now concentrated on the islets surrounding the island.

However, although it was forbidden to hunt grey seals, the practice continued in secret (Danto et al., 2020). Kihnu, as has been said, was a country within a country, with its own local, unwritten laws. The reason for continuing the hunt was mostly practical: as more and more fish were caught with fishing nets, more and more seals were also caught inadvertently. The solution was to kill the injured animals instead of putting them back into the water where they would die.

The most valuable product obtained from seals used to be blubber. It was procured from older animals, whose fat accounts for nearly half of their body weight. By heating the lard, oil was obtained, which was used as an impregnating agent for wood or as a lubricant for the moving parts of household tools. An additional asset was the white fur skins of seal cubs, which were used to make fur coats and hats. Old seal meat has a specific taste and was therefore consumed less often, while young animal meat was boiled and eaten with potatoes or salted for preservation. Since 2015, when seal hunting was allowed again on Kihnu, only smoked meat and preserves have been made from the meat. Boiling with potatoes and salting are no longer carried out. Minced seal meat is usually mixed with pork and rind, which makes the preserve juicier. In fact, hunters had to learn to hunt seals again as traditional ice hunting (from January to April) is now prohibited and only hunting from a boat is permitted. In addition, since most of the areas inhabited by seals are still under protection, these animals can only be hunted in a very limited area. These limitations make seals one of the most difficult animals to hunt today. However, the attitude of local fishermen towards seals is quite negative, as these animals break fishing nets and eat a lot of fish when they go into the *kakuaam* (net box or fyke).

DISCUSSION

Effects of Plans and Regulations on Residents and their LEK-Related Practices

From the stories told by local residents, it became clear that after the creation of protected areas on Kihnu, many regulations have been enacted that have started to affect life. Urban nature conservationists make standard rules without considering the wishes of local residents. Since most of the meadows in the coastal area of Kihnu have been placed under protection, the dates when

hay needs to be mowed must be observed. However, a regulation with such accuracy has never existed in history, as the weather and other factors have always been taken into consideration. In specific cultural heritage areas, as we were told, it is forbidden to build with modern, non-traditional materials; for example, to instal plastic windows in a house. As a local woman (born 1970) said:

Laws concerning the lives of locals are prepared at a table in an office in Tallinn and they do not take the locals into account at all. As it was beautifully said somewhere, ‘We are told from Tallinn that you are not allowed to do anything here ...’ Everything that we have been doing all along, the conditions are set. The house must have wooden window frames and a straw roof; where and when you can hunt seals; bird eggs must not be collected; fishing bans; etc. But in Tallinn, they put everything under asphalt, and they are losing parks in the city. Nature can be put under asphalt there, and we have to suffer here and limit our lives. So, the protection of nature is done at the price of our traditional environment ...

In addition, people living within the borders of the nature protection area, which covers a large part of Kihnu, are not allowed to put solar panels in their yard to generate their own electricity. However, the plants that are protected could continue to grow under solar panels. At the same time, a national project is being launched to put hundreds of large wind generators around Kihnu in the Gulf of Riga. As the locals say, these would greatly affect their lives: beautiful views of sunset would be lost and the noise from their movement would be apparent. The project could also deter birds, fish and seals from the area.

The ban on going to islets has greatly affected local life. Residents had been visiting pastures on the islets for hundreds of years, making hay, foraging birds’ eggs, resting during seal hunting, etc. Although people had learned to treat birds with respect, nature conservation laws did not take this into account and prohibited any movement in these areas. Small islets were visited before to collect northern bedstraw (*Galium boreale*) roots, an important dye plant. It was used to dye yarn red to knit red stripes on the socks that are the important part of Kihnu national costume.

Supporting the Inclusion of the Local Community and Knowledge in Nature Conservation

Fikret Berkes (2004), a distinguished ecologist advocating community-centred conservation and management of natural resources, points out that open access resources are characterized by depletion and overexploitation because they are targeted for the international market and are not consumed by local people. They are not under local control and are not common property of the community. In the case of Kihnu, this is true for waterfowl hunting, which has never

been used as a community resource on the island but only developed with the arrival of the open market in the 2000s, when there was international demand for it. This type of hunting is not subject to locally established rules and is governed by national and EU legislation. The shooting of thousands of waterfowl by foreign hunting tourists is therefore an unpleasant sight for locals. Likewise, eel and perch have historically never been of any importance to the Kihnu people as a source of food, but their importance started to increase when they began to be fished for foreign markets.

However, Berkes (2004) adds that resources used locally are rarely open or freely available to all and are often subject to local rules on resource use. In the case of Kihnu, this includes waterfowl eggs, which have never been removed from the community, with unwritten rules on egg collecting ensuring a balance between bird welfare and resource harvesting. This resource has been treated as communal, i.e., a bird egg collector (or a family with several *Mergus* nest boxes) who collects eggs from coastal areas and islets shares their surplus free of charge within the community with those who cannot go to collect their own eggs (or who do not have their own nest boxes). The same applies to hunted seals and fish.

Today, one of the biggest threats in Kihnu is the loss of a way of life that can feed the local community. What has disappeared is the pastoralism that kept species-rich grasslands open. Nature conservation money now supports the management of these meadows, but how this activity will improve local lives remains unclear. This approach is a legacy of a dualistic world view in which humans, that is locals, are separated from nature. Locals no longer relate to this 'anonymous' nature reserve, or to the nationally or trans-European protected species that grow and graze there. This is because locals can no longer use the area according to their own will and understanding, and therefore they have no interest in caring for it. For example, we mentioned above how the state forbids a person to instal solar panels on their own land (Natura 2000 protected area), even their own back yard. Does this solar panel, only a few square metres in area, threaten the general preservation of the protected habitat? Or rather does the long-term deterioration of the quality of life of local residents threaten the abandonment of this semi-natural area? We suggest that the well-being of the local people and that of nature are interrelated and therefore one cannot come at the expense of the other. In his latest book, Berkes (2021) offers eight points for discussion on how to change the way we think about nature conservation today. The first of these is that all cultures have traditions of conservation, and we need to build on them. In the book, he also emphasizes the principle of community-based conservation, to give back to local people the responsibility of caring for their environment and the skill of interacting with (e.g., using) their surroundings. For example, sheep grazing in Kihnu nature reserves is today supported by nature conservation. At the same time, local artisans often

buy yarn from Italy to make their folk costumes because the yarn from sheep reared on the island is deemed not suitable. However, for centuries sheep have been grazed and the wool used locally. Thus, as Berkes (2021) states, nature and culture are interlinked. Therefore, a sheep farmer who receives public subsidies could work with local artisans to find the most suitable sheep breed to satisfy folk costume makers.

Berkes et al. (2001) stated that, in small-scale fisheries, fishermen have much stronger incentives to use local resources sustainably because they are tied to the resources of the particular area and their families are dependent on this source of income. This was also evident when talking to fishermen on Kihnu, as they were satisfied with the service they received from their work as fishermen, i.e., they did not work for large profits, but rather, because they were fishermen for several generations, they felt obligated to keep the tradition alive. However, the big fishing companies in Pärnu, as said earlier, are profit oriented and therefore have to fish more and more, and they do not think about fishing sustainably as, when there are not enough fish, they have the ability to fish far from the coast and over large areas, which small-scale fishermen cannot do. One of the biggest problems on Kihnu today is the lack of local fish processing facilities (i.e., there are only a few home cooks and one family business, Kihnu kalur) and therefore a heavy dependence on fresh fish buyers and seasonal income. Local fish curing would provide an opportunity to generate income over a longer period of time. However, unstable incomes do not motivate the succession of small-scale fishermen, which leads to the disappearance of sustainable fishing.

CONCLUSION

As the starting point for this chapter, we pointed out that nature conservation and local culture cannot be separated. Kihnu culture is now included in the UNESCO list of Intangible Heritage, and Kihnu Islets Nature Reserve has been created in and around Kihnu Island. In the case of Kihnu, we can observe how nature conservation and cultural protection have moved in different directions. An abundance of species, especially seabirds, have been present on the island for centuries and locals have not affected them negatively. The number of plants, birds, fish and other animals, which have decreased as a result of general global factors, is related to the disruption of the accustomed way of life of locals (e.g., it is forbidden for them to go to places where they used to go before). We observed that locals are aware of the species richness of their surroundings and have cared for it for generations. Thus, nature conservation regulations should be diverse, flexible, and pluralistic, and in which the importance of local culture is also considered. As a woman born in 1937 told us:

'Everything is protected now [in nature], but who protects [local] people?' If the local culture is preserved, the local population will also survive.

We stress that for the development of sustainable and sound nature conservation practices biocultural aspects need to be seriously considered and local people must be trusted as keepers of the local environment and granted special considerations in ecosystem management. The unwritten rules following reciprocal exchange between local human inhabitants and other species in coastal ecosystems create trust and sustain both communities, stretching out beyond the regulations and rigid rules of nature conservation for the sake of conservation. Locals, on the community level, especially those still practising coastal livelihood activities, have to be involved in both decision-making and implementation. Local voices need to be not only heard but given higher priority in developing the regulations concerning local life and nature–people relationships.

However, local perceptions need to be listened to first and actively incorporated into the nature protection debate and decision-making process through trans- and interdisciplinary approaches to local knowledge and practices. Kihnu's amazing biocultural heritage still partially survives thanks to the resilience of its people, who have continued to cope with environmental and social changes for centuries. Their involvement in the management of their Baltic environment has to be not just a daydream, but rather a moral imperative, supported by legislation and scholarly interest in their practices from a variety of scientific disciplines that work together.

NOTES

1. We gratefully acknowledge the local people who shared with us their knowledge and practices. Kalle, Sõukand, and Pieroni were supported by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 714874) and Kalle was also supported by the Estonian Research Council (grant agreement No STP37).
2. Kalle, Sõukand, and Pieroni interviewed 21 people in 2021 and Anatole Danto interviewed 18 people in 2015–2022. Fieldwork materials are currently in the personal archives of the authors. After systematization they will be deposited in the Kihnu Museum and in the Estonian Literature Museum.
3. Under the 2003 Convention, see <https://ich.unesco.org/en/RL/kihnu-cultural-space-00042?RL=00042>.
4. <https://www.riigiteataja.ee/akt/121062016032>
5. <https://www.riigiteataja.ee/akt/KPS>
6. See the Kihnu bird survey blog: <https://kih nubirding.blogspot.com/>.
7. Within the islands of the Gulf of Riga, many rules stemming from ancient, oral customary laws persist, see Põder, 2006.

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