

# Cultural Ecosystem Services (CES) in Stewardship and Management

## A Compilation of Case Studies

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Additional information and resources from this project are available on the [project page](#).

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# Case Study 1:

## Manoomin (Wild Rice) and the Great Lakes Ecosystem

### Project Overview

Together state, federal, and First Nation partners developed a 12-metric scale for CES. Drawing from and building upon existing frameworks on community and Indigenous health (Donatuto et al. 2016, Fond du Lac Band 2018) and biocultural functional groups (Winter et al. 2018), the project team tailored the framework to be meaningful to Manoomin (wild rice) and the Great Lakes ecosystem. The framework was developed by a diverse group that represented a range of interests including representatives of various government agencies and many individuals from the local Anishinaabe communities. This framework was applied to seven case studies at different locations to understand how these metrics have changed over time. The resulting data highlights how much Manoomin restoration would be needed to recoup ecological and cultural benefits that were lost following a loss of Manoomin.



#### Full Citation:

Great Lakes Wild Rice Initiative. 2020. Lake Superior Manoomin Cultural and Ecosystem Characterization Study Final Report. Available at <https://lakesuperiorreserve.org/resources/lake-superior-manoomin-cultural-and-ecosystem-characterization-study/>.



#### Who led the work?

Lake Superior Basin Anishinaabe (Ojibwe) resource management staff and community members with a diverse group of state and federal agencies (e.g., Lake Superior NERR, NOAA, National Sea Grant College Program, etc.) with ABT Associates.



#### What is assessed?

The cultural and ecological importance of Manoomin (wild rice)



#### Where?

Inland wild rice lakes and estuarine ecosystems in the Lake Superior region

### Assessment Methods

As part of a combined Habitat Equivalency Analysis (HEA) approach, a list of metrics were developed to characterize the cultural and ecological importance of Manoomin. This was done by the diverse team conducting the work (see above) who started with existing frameworks for community and Indigenous health, adding and adjusting them as necessary to fit the context of Manoomin in the Great Lakes Basin. The following 12 metrics “describe how Manoomin contributes to maintaining connections with the Anishinaabe culture, how ecological functionality is supported and resilient to changing conditions, and how continued learning and sharing of Anishinaabe values are promoted.”

#### Cultural Metrics



**Anishinaabe (original people)** – The place provides manoomin, which is sacred to the Anishinaabe and central to the foundations of their culture, sovereignty, and treaty rights.



**Community relationships** – Manoomin at this place contributes to bonding, traditions, and strengthening family and community connections.



**Spirit relationships** – Manoomin at this place enables the Anishinaabe to maintain connections and balance with spirit beings (or relatives) from all other orders of creation (first order: rock, water, fire and wind; second order: other plant beings; third order: animal beings; fourth order: human beings).



**Manoominikewin** – This place allows for the Anishinaabe to harvest, prepare, and share (gifting, healing, and eating) manoomin in the ways practiced by their ancestors for centuries.



**Food sovereignty and health** – This place provides the capacity to provide for the sustenance, health, and independence of the Anishinaabe.

#### Ecological Metrics



**Biodiversity** – Healthy manoomin and appropriate habitat at this place supports diverse biological communities (e.g., free of invasive species) that indicate the capacity of the place to support abundant associated plant and animal species (e.g., other native aquatic vegetation, fish, waterfowl, muskrat), providing for spiritual and subsistence needs.



**Integrity** – Physical habitat and hydrology, water and sediment chemistry support stands of manoomin that exhibit natural annual variability; viable seed bank ensures that sustainable manoomin populations will persist even after occasional poor production years. Natural genetic diversity is maintained without impact from cultivated strains, or reduced gene flow from the loss of nearby manoomin populations.



**Water quality** – This place has clean water (e.g., sulfate levels below 10 ppm) and sediments that can support robust stand density and wildlife diversity; is free of contamination or impacts from industrial, agricultural, recreational, or residential influence; and is of sufficient areal extent to sustain a manoomin population.



**Water level** – This place has a natural or managed hydrologic regime that can maximize resilience under variable or extreme climatic conditions across the growing season (maintaining optimal depth range and flow).

## Cultural and Ecological Education Metrics



**Knowledge generation** – This place allows for continued learning and generation of the Anishinaabe practices, values, beliefs, and language through experience.



**Knowledge sharing** – This place allows for the continued sharing and transmittal of the Anishinaabe practices, values, beliefs, and language among family members and community.



**Educational opportunities** – This place provides opportunities for language, land stewardship, and other educational programs, such as educational rice camps.

The following five point scale was developed for community members to assess each metric over time:

*We're doing great*  
*We're looking pretty good*  
*Things are not very good*  
*Things are very bad*  
*No use of Manoomin*

Source: Great Lakes Wild Rice Initiative, 2020

### For more on this and related studies, see:

- Donatuto J, Campbell L, Gregory R. 2016. Developing responsive indicators of indigenous community health. *International Journal of Environmental Research and Public Health* 13: 899.
- Fond du Lac Band of Lake Superior Chippewa. 2018. Expanding the Narrative of Tribal Health: The Effects of Wild Rice Water Quality Rule Changes on Tribal Health. Available at <http://www.fdlrez.com/RM/downloads/WQSHIA.pdf>.
- Winter K, Lincoln N, Berkes F. 2018. The social-ecological keystone concept: A quantifiable metaphor for understanding the structure, function, and resilience of a biocultural system. *Sustainability* 10(9): 3294.

## Case Study 2:

# Place-making framework for CES in Puget Sound, Washington

### Project Overview

Understanding and improving the conditions that enable multiple forms of place attachments (e.g., access, knowledge, and ecological integrity) is important for place-making and human well-being. Through their application of a place-making framework, the project team found that among varied residents of the Puget Sound region, people's sense of and attachment to place, including its development and maintenance, span at least four key dimensions: (1) harvesting and other place-making activities ("activities"); (2) cultural and familial heritage ("heritage"); (3) personal and emotional experiences ("personal"); and (4) social-relational connections ("social"). The key linkages discussed between restoration, place attachment, and well-being included: incorporating local priorities, building community and knowledge, and connections to place as motivation for restoration and conservation. Complex interactions that form a multidimensional sense of place are important drivers of stewardship in integrated cultural-ecological systems such as Puget Sound.



#### Full Citation:

Poe M, Donatuto J, Satterfield T. 2016. "Sense of place": Human well-being considerations for ecological restoration in Puget Sound. *Coastal Management* 44(5): 409-426.



#### Who led the work?

Researchers from University of Washington and University of British Columbia, and the Swinomish Indian Tribal Community



#### What is assessed?

Sense of place of tribal and non-tribal residents in context of ecological restoration for shellfish harvest



#### Where?

Puget Sound, Washington State

### Assessment Methods

Researchers coordinated with local leaders and tribal liaisons to identify (1) members of tribal communities with ties to shellfish harvesting, (2) non-tribal residents who harvested shellfish, and (3) non-tribal residents who did not harvest shellfish but had a unique tie to Puget Sound, for semi-structured interviews and participation in facilitated workshops to investigate how different coastal people form and experience place attachments and how this affects their well-being and generates care for local environments.

### For more on this and related studies, see:

Davenport M, Anderson D. 2005. Getting from sense of place to place-based management: An interpretive investigation of place meanings and perceptions of landscape change. *Society and Natural Resources* 18(7): 625-641.

Donatuto J, Poe M. 2015. Evaluating sense of place as a domain of human well-being for Puget sound restoration. Tacoma, WA: Puget Sound Institute. Available at <https://www.eopugetsound.org/articles/evaluating-sense-place-domain-human-well-being-puget-sound-restoration>.

Failing L, Gregory R, Higgins P. 2013. Science, Uncertainty, and values in ecological restoration: A case study in structured decision-making and adaptive management. *Restoration Ecology* 21(4): 422-430.

Gregory R, Failing L, Harstone M, Long G, McDaniels T, et al. 2012. Structured decision making: A practical guide to environmental management choices. Wiley-Blackwell.

McLain R, Poe M, Biedenweg K, Cervený L, Besser D, et al. 2013. Making sense of human ecology mapping: an overview of approaches to integrating socio-spatial data into environmental planning. *Human Ecology* 41(5): 651-665.

Poe M, Norman K, Levin P. 2014. Cultural dimensions of socio-ecological systems: Key connections and guiding principles for conservation in coastal environments. *Conservation Letters* 7(3): 166-175.

# Case Study 3:

## Place-based and Indigenous CES in Hawai'i

### Project Overview

Common framings of CES can leave out values that are crucial to many place-based communities. In response, the project team developed a Hawai'i-based CES framework that builds upon the reciprocal and inexorable connection shared between people and place that is characteristic of Hawai'i's Indigenous and local communities. This work identified novel CES such as the feeling of safety/security in the place you call home (and/or knowing you have a place to return to), revitalization and perpetuation of Indigenous and local environmental practices, and cultural subsistence – a holistic approach to harvesting resources based on an in-depth knowledge of customary norms, environmental conditions, and adaptive harvesting practices. Creating a well-informed conceptualization of CES for the broader community to react to (i.e., through workshops, forums, etc.) can help foster productive exchanges and may support community members in broader engagement of diverse stakeholder groups. The study found that it can be difficult to parse some CES between interwoven categories, and asking participants to make such distinctions might be unproductive. Among other takeaways, this study highlights the importance of creating space for participants to organize their values in a more holistic manner.



#### Full Citation:

Pascua P, McMillen H, Ticktin T, Vaughan M, Winter KB. 2017. Beyond services: A process and framework to incorporate cultural, genealogical, place-based, and indigenous relationships in ecosystem service assessments. *Ecosystem Services* 26: 465–475.



#### Who led the work?

University of Hawai'i researchers and local community representatives



#### What is assessed?

Place-based and Indigenous CES



#### Where?

Hawai'i

### Assessment Methods

A conceptual framework for CES was developed in a multi-stage process. First a working group, composed of academic researchers and Indigenous scholars, was convened to draft an initial conceptual framework. Community workshops were then held to gain first hand perspectives around place-based and Indigenous CES, with insights from these gatherings used to further inform and refine the CES conceptual framework. The final framework laid out the following four key cultural ecosystem services categories, each of which has multiple benefits based on traditional values and cultural practices. Below we list the four categories and provide one benefit and example for each.

#### 'Ike: Knowledge

- *Benefit/Example: Ma ka hana ka 'ike: Opportunities to learn place-based practices by actually doing them; e.g., salt gathering, gathering of seasonal seaweed varieties*

#### Mana: Spiritual landscapes

- *Ho'omana/Mauli Ola: Spiritual beliefs and practices that allow people to interact with the mana of a landscape; e.g., formal ceremonial practices, informal interactions, perpetuation of songs, chants, dances, and prayers of/for place*

#### Pilina Kanaka: Social Interactions

- *Ho'olako: Perpetuation of practices/skills that allow individuals to provide for their families; e.g., goods for household, goods for sharing, income from occupation, jobs that require knowledge of traditional practices or the discipline required to do them well*

#### Ola Mau: Physical and Mental Well-being

- *Lako/Momona: Availability and access to subsistence resources rich enough for people to thrive; e.g., quantity and quality of water, presence and abundance of species of cultural value, fertile soil*

### For more on this and related studies, see:

Bremer L, Falinski K, Ching C, Wada CA, Burnett KM, Kukea-Shultz K, Reppun N, Chun G, Oleson KL, Ticktin T. 2018. Biocultural restoration of traditional agriculture: cultural, environmental, and economic outcomes of Lo 'i Kalo restoration in He 'eia, O 'ahu. *Sustainability*, 10(12), p.4502.

Gould RK, Klain SC, Ardoin NM, Satterfield T, Woodside U, et al. 2015. A protocol for eliciting nonmaterial values through a cultural ecosystem services frame. *Conservation Biology* 29(2): 575–586.

Gould RK, Pai M, Muraca B, and Chan KM. 2019. He 'ike 'ana ia i ka pono (it is a recognizing of the right thing): How one indigenous worldview informs relational values and social values. *Sustainability Science*, 14(5), pp.1213–1232.



# Case Study 4:

## Cultural Ecosystem Services and Human Well-Being in West Hawai'i

### Project Overview

The West Hawai'i Integrated Ecosystem Assessment identified cultural ecosystem services to inform management metrics and efforts that may better reflect the full value of ecosystem services to the local community. Together with federal and local community partners, this study sought to understand how resource management can include information about human well-being to support management practices. Community collaboration was essential to ensure that indicators were relevant, appropriate, and represented local values and beliefs. The project team conducted a series of interviews which, through a series of guided prompts, supported community respondents in articulating what CES they experience, connect with, benefit from, and value. An analysis of data collected informed a framework for monitoring CES, with three overlapping components: ecological foundation of CES; community values, beliefs, and perspectives; and creating and conserving access to CES for communities. This study highlights the different ways that CES and human well-being can be better utilized in contemporary resource management.



#### Full Citation:

Ingram R, Leong K, Gove J, Wongbusarakum S. 2020. Including human well-being in resource management with cultural ecosystem services. U.S. Dept. of Commerce: 94. Available at [https://repository.library.noaa.gov/view/noaa/27915/noaa\\_27915\\_DS1.pdf](https://repository.library.noaa.gov/view/noaa/27915/noaa_27915_DS1.pdf).



#### Who led the work?

University of Hawai'i researchers and the National Oceanic and Atmospheric Agency Pacific Islands Fisheries Science Center



#### What is assessed?

How people in West Hawai'i (Hawai'i Island) experience and value cultural ecosystem services and how those CES influence human well-being



#### Where?

Hawai'i Island

### Assessment Methods

Researchers conducted in-depth, semi-structured interviews with community members (community leaders and individuals in paid resource management roles), and analyzed responses using a codebook developed throughout the process (Table 1 includes categories from this codebook). A literature review and interview data informed the creation of a set of place-based, biocultural indicators of CES focused on representing CES and human well-being within the West Hawai'i Integrated Ecosystem Assessment program.

Below is a table of the CES categories developed in the process:

|                         |                              |                |                  |
|-------------------------|------------------------------|----------------|------------------|
| aesthetics              | existence                    | inspiration    | social relations |
| bequest                 | fulfilling stewardship       | recreation     | spirituality     |
| ceremony                | heritage, tradition, culture | sacred         |                  |
| education and knowledge | identity                     | sense of place |                  |

(Ingram et al. 2020)

### For more on this and related studies, see:

- Breslow SJ, Allen M, Holstein D, Sojka B, Barnea R, et al. 2017. Evaluating indicators of human well-being for ecosystem-based management. *Ecosystem Health and Sustainability* 3(12): 1-18.
- Dacks R, Ticktin T, Mawyer A, Caillon S, Claudet J, et al. 2019. Developing biocultural indicators for resource management. *Conservation Science and Practice* 1(6): e38.
- Dillard MK, Goedeke TL, Lovelace S, Orthmeyer A. 2013. Monitoring well-being and changing environmental conditions in coastal communities: development of an assessment method. Available at <https://coastalscience.noaa.gov/publications/detail.aspx?resource=vEJnl8tRMtte2uSEyRGtPk33w24iNAPwSRAf9Pp6iYM=>.
- Infield M, Morse-Jones S, Anthem H. 2015. Guidelines for the rapid assessment of cultural ecosystem services (GRACE): Version 1. Fauna & Flora International.
- Leong K, Wongbusarakum S, Ingram R, Mawyer A, Poe M. 2019. Improving representation of human well-being and cultural importance in conceptualizing the West Hawai'i Ecosystem. *Frontiers in Marine Science* 6: 231.
- Olander L, Johnston R, Tallis H, Kagan J, Maguire L, et al. 2018. Benefit relevant indicators: Ecosystem services measures that link ecological and social outcomes. *Ecological Indicators* 85: 1262-1272.
- Rodrigues JG, Kruse M. 2017. Marine and coastal cultural ecosystem services: Knowledge gaps and research priorities. *One Ecosystem* 2: e12290.

# Case Study 5:

## Place-based CES assessment in Kachemak Bay watershed, Alaska

### Project Overview

Using a social value typology (SVT) framework (Table 5.1) drawn from Cole's (2012) SVT for coastal communities, this study analyzed the value orientations associated with the watershed. Several common value types emerged including: values for pristine environments, recreation opportunities, and life-sustaining ecological processes. Other values outside of existing typologies were also found, including the value of connections to community, family, self and nature that were inspired by ecological systems. Indicators based on literature and interviewee responses are provided, including for CES (Table 6.4), and methodologies to plan future research on coastal and marine ecosystem service valuation, both monetary and non-monetary, are provided.



#### Full Citation:

Flaherty E, Kirkpatrick K, Snow T. 2019. Human and environmental well-being in Alaska's Kachemak Bay watershed: an ecosystem services assessment. University of Michigan, School for Environment and Sustainability. Available at <https://deepblue.lib.umich.edu/handle/2027.42/148820>.



#### Who led the work?

University of Michigan researchers working in close coordination with the Kachemak Bay National Estuarine Research Reserve



#### What is assessed?

Current ecosystem services valued in Kachemak Bay using a socio-cultural, place-based, ecosystem services framework



#### Where?

Kachemak Bay watershed, located on the Kenai Peninsula in Alaska; Kachemak Bay National Estuarine Research Reserve (KBNERR)

### Assessment Methods

The project team conducted semi-structured interviews (using key-informant sampling and snowball techniques) with residents in public and private sectors and three focus groups with KBNERR's Community Council.

Below we list some of the questions participants were asked to better understand what aspects of Kachemak Bay are valued and better understand how they are valued:

- *How would you describe your community? What is particularly special about it?*
- *Are there particular places/resources in the Kachemak Bay region that are important to you or your family?*
- *What specifically is valuable about this place/resource to you? What is its relative importance to you or your community?*
- *How do you interact with the natural landscape?*
- *What are your hopes and concerns for the future of this resource?*

### Social Value Typology for Kachemak Bay

|                                      |             |                                      |
|--------------------------------------|-------------|--------------------------------------|
| Pristine/Natural                     | Access      | Biodiversity                         |
| Recreation                           | Cultural    | Connection to Community              |
| Life-sustaining Ecological Processes | Future      | Connection to Self/Personal Identity |
| Therapeutic                          | Aesthetic   | Connection to Nature                 |
| Spiritual                            | Learning    | Connection to Family                 |
| Economic                             | Subsistence |                                      |

(Flaherty et al. 2020)

Cultural Services and Indicators. Below is a list of CES and potential indicators that could be applied in Kachemak Bay. This list is not exhaustive rather a starting point of ways to measure these important connections.

| <b>Cultural Service</b>            | <b>Potential Indicators</b>   |
|------------------------------------|---|
| Educational values and inspiration | Amount of time (# person days) dedicated to creation of culture, art, and design                          |
| Recreation, Ecotourism             | Amount of time (# of person days) spent in education or research that involve coastal/marine environments |
| Aesthetic inspiration              | Local art shows attendance, Presence of artistic community through businesses, museums                    |

*(As described in Flaherty et al. 2020 and derived from Barbier et al. (2011), Bohnke-Henrichs et al. (2013), Lique et al. (2013), Millennium Ecosystem Assessment (2005))*

### For more on this and related studies, see:

Barbier, E.B., Hacker, S.D., Kennedy, C., Koch, E.W., Stier, A.C., & Silliman, B.R. (2011). The value of estuarine and coastal ecosystem services. *Ecological Monographs*, 81: 169-193.

Böhnke-Henrichs, A., Baulcomb, C., Koss, R., Hussain, S. S., & de Groot, R. S. (2013). Typology and indicators of ecosystem services for marine spatial planning and management. *Journal of Environmental Management*, 130, 135–145.

Cole Z. 2012. Mapping Social Values of Ecosystem Services in Sarasota Bay, Florida: E-Delphi Application, Typology Development, and Geospatial Modeling. University of Florida, The Graduate School.

Cole Z, Holland S, Donohoe H. 2015. A Social Values Typology for Comprehensive Assessment of Coastal Zone Ecosystem Services. *Society & Natural Resources* 28(12): 1290-1307.

Lique et al., C., Piroddi, C., Drakou, E. G., Gurney, L., Katsanevakis, S., Charef, A., & Egoh, B. (2013). Current Status and Future Prospects for the Assessment of Marine and Coastal Ecosystem Services: A Systematic Review. *PLoS ONE*, 8(7). DOI:10.1371/journal.pone.0067737

Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Synthesis Report*. Island Press. Washington DC.



## Case Study 6:

# Practical guidance on measuring the social values of ES in Aransas Bay, Texas

### Project Overview

This case study outlines a novel method to combine surveys, participatory mapping, and stakeholder outreach to assess CES in Mission-Aransas National Estuarine Research Reserve. In a survey analyzing individuals' place attachment to the Reserve, the project team found that a vast majority of respondents agreed that the bays of the Reserve are an important part of their lives and their communities. The study also found that place attachment is significantly reduced the further respondents reside from the Reserve. Place attachment was determined by analyzing the relationship between 1) the distance from a respondent's primary place of residence to the Reserve, and 2) the respondent's level of agreement with a set of prompts related to place attachment.

In a participatory mapping component, the study showed that Recreation, Aesthetics, and Wilderness were most heavily mapped out of 13 social value types (see assessment below). Spatial data from this exercise, along with environmental variables for the study area, were used to develop the Social Values for Ecosystem Services (SolVES) GIS application. Results of SolVES analysis showed that each of the 13 value types clustered significantly except that of Spiritual, and that the values of Biodiversity, Recreation, Aesthetics, and Economics received the highest weighting allocation. The study also presents heat maps generated for the entirety of the study area showing areas of highest and lowest social value for each of these value types.



#### Full Citation:

Loerzel J, Knapp L, Gorstein M. 2017. Gauging the social values of ecosystem services in the Mission-Aransas National Estuarine Research Reserve. Available at [https://repository.library.noaa.gov/view/noaa/17250/noaa\\_17250\\_DS1.pdf](https://repository.library.noaa.gov/view/noaa/17250/noaa_17250_DS1.pdf).



#### Who led the work?

NOAA National Centers for Coastal Ocean Science



#### What is assessed?

Current ecosystem services valued in Kachemak Bay using a socio-cultural, place-based, ecosystem services framework



#### Where?

Mission-Aransas National Estuarine Research Reserve, Aransas Bay, Texas

### Assessment Methods

The research team implemented a survey-based method to understand community perceptions of: ecosystem changes, the social benefits derived from the Reserve-area ecosystem, the places within the watershed they associated most closely with these benefits, their level of personal/emotional attachment to the ecosystem, and critical resource management issues. The research team sought to capture the perspectives of the multiple user-groups present in Aransas Bay, Texas including commercial entities, non-profit institutions, local residents (seasonal and permanent), visitors, students and teachers.

To conduct surveys, three methods of sampling were used: Intercept surveys (used with seasonal residents and summer visitors), mail-back surveys (used for full-time residents), and snowball sampling. The complete survey is provided in the report, including 5 components: ranking of perceptions of ecosystem change, ranking of level of attachment to ecosystem, ranking importance of benefits/values of ecosystem through value allocation exercise, participatory mapping, and ranking resource management initiatives.

#### Social Value Types

|                  |             |             |            |           |
|------------------|-------------|-------------|------------|-----------|
| Biodiversity     | Socializing | Human Needs | Aesthetic  | Spiritual |
| Economic         | Inspiration | Learning    | Wilderness |           |
| In and of itself | Recreation  | Therapeutic | Legacy     |           |

(Loerzel et al. 2017)

#### For more on this and related studies, see:

Sherrouse B, Semmens D. 2012. Social Values for Ecosystem Services, Version 2.0 (SolVES 2.0): Documentation and User Manual. U.S. Geological Survey: 55. Available at <https://pubs.er.usgs.gov/publication/ofr20121023>.

## Case Study 7:

# Placed-based approach to measuring CES for small scale fisheries in the English Channel and Southern North Sea

### Project Overview

This case study, and its associated project reports, describe a relational, co-constructed approach that offers a way of making visible an array of social and cultural values influenced and made possible by small-scale fisheries. Acott and Urquhart (2017) describe how small-scale fisheries result in a series of ‘transformations’ as the marine environment is translated into cultural ecosystem services and sense of place in coastal settings (see table below). This perspective is broadened using a social well-being lens which “draws attention to the multiple ways that [small-scale fisheries are] bound up with the well-being of people and begins to address the limitations of an economic analysis alone.” The authors suggest that the concept of ‘sense of place’ may help to better understand how people experience well-being in the situated contexts of the environments and cultures in which they live. In aligning sense of place, ecosystem services, and social well-being, the interrelationships between nature and society can help to reveal the multiple values of small-scale fisheries.



#### Full Citation:

Acott T, Urquhart J. 2018. Co-constructing cultural ecosystem services and wellbeing through a place-based approach. *Social Wellbeing and the Values of Small-scale Fisheries*. Springer: 23-43.



#### Who led the work?

University of Greenwich researchers, leading two INTERREG IVA co-funded projects: CHARM III (Channel Integrated Approach for Marine Resource Management) and GIFS (Geography of Inshore Fishing and Sustainability).



#### What is assessed?

Values and benefits from small-scale fisheries, as identified by stakeholders in local fishing towns in England, France, the Netherlands, and Belgium.



#### Where?

English Channel and Southern North Sea (European Union)

### Assessment Methods

To explore the contribution of small scale fisheries in defining and shaping sense of place, the project team conducted 112 semi-structured interviews with stakeholders in fishing towns in southern England and northern France (CHARM III) and 1,702 questionnaire surveys in fishing communities in England, France, the Netherlands and Belgium (GIFS). The qualitative analysis and broader assessment of CES is embedded within a larger co-funded collaborative research project. Further methodological details from the full project is outlined Acott and Urquhart 2012 and Urquhart et al. 2014.

CES that emerge from small-scale fisheries

|  |                              |                                 |
|--|------------------------------|---------------------------------|
| Cultural identity                        | Place meaning                | Connection to the natural world |
| Place character and aesthetic values     | Cultural heritage and memory | Tourism                         |
| Individual and group attachment to place | Inspiration                  | Knowledge                       |

*Additional sources: Urquhart et al. 2014*

### For more on this and related studies, see:

Acott T, Urquhart J. 2012. Marine fisheries and sense of place in coastal communities of the English Channel. University of Greenwich.

Urquhart J, Acott T, Sanghera A. 2014. Sense of Place and Cultural Values in Inshore Fishing Communities. GIFS Activity 2.1 Final report. University of Greenwich: 135. Available at [http://www.vliz.be/projects/gifsproject/sites/gifsproject.eu/files/public/documents/images/pdf/GIFS\\_Activity\\_2.1\\_Final\\_Report.pdf](http://www.vliz.be/projects/gifsproject/sites/gifsproject.eu/files/public/documents/images/pdf/GIFS_Activity_2.1_Final_Report.pdf).

Urquhart J, Acott T. 2014b. A sense of place in cultural ecosystem services: The case of Cornish fishing communities. *Society and Natural Resources* 27(1): 3-19.

## Case Study 8:

# Mapping recreation and tourism areas in Southern Chile

### Project Overview

This project presents a mixed-methods to map CES as identified by local communities in Southern Chile using attributes such as scenic beauty and accessibility as a proxy for recreation and ecotourism. The research team used mapping techniques and a participatory approach with two different groups: one of professionals in the tourism and landscape ecology fields, and another composed of individuals who engage in ecotourism. The representation of the two stakeholder groups was key to broaden the perspectives considered, especially since the two groups were not always in agreement. The resulting insights were used to create an indicator of recreation and ecotourism potential that takes into account sustainability factors, and is intended to support management decisions.



#### Full Citation:

Nahuelhual, L., Carmona, A., Lozada, P., Jaramillo, A. and Aguayo, M., 2013. Mapping recreation and ecotourism as a cultural ecosystem service: An application at the local level in Southern Chile. *Applied geography*, 40, pp.71-82.



#### Who led the work?

Researchers from Chile-based Universities and NGOs



#### What is assessed?

Measures of recreation and tourism



#### Where?

Ancud municipality, in Chiloé Island, Southern Chile

### Assessment Methods

The study's methodological framework includes use of GIS and participatory methods, specifically the Delphi method (a process used to identify group opinions or by consulting a panel of experts) and Analytic Hierarchy Process (AHP, an analysis tool that uses pairwise comparisons to facilitate value weightings across different attributes). Together with two teams of experts, the project team implemented interviews and follow-up discussions/assessments to gauge individuals classification of the recreation and ecotourism attributes and their mapping. The combined method used an iterative process to reach the greatest consensus possible regarding the relevant CES attributes, their spatial mapping, and measurement approaches.