



## The Human Dimensions of Small Cetacean Conservation: 2022 Workshop Report, Nuremberg, Germany



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*In December 2022, a workshop on Human Dimensions of Small Cetacean Conservation was held in Nuremberg, Germany. The goal of the workshop was to examine the role of human behavior, thoughts, and feelings in species conservation efforts for dolphins and porpoises. Participants reviewed current challenges and opportunities for engaging local communities and stakeholders in conservation efforts. The need for a more holistic approach that takes into account social, economic, cultural, and political factors was highlighted. The importance of collaboration between conservation organizations, governments, and local communities was emphasized, as was the need for adaptive management that considers the changing needs and perspectives of stakeholders over time. The workshop concluded that (1) incorporating human dimensions considerations into small cetacean conservation efforts means careful attention to the role of human behavior in causing and mitigating impacts on the animals and their environment, (2) successful strategies for improved dolphin and porpoise conservation must ultimately include actions that result in changes in human behaviour, and (3) we must work with and for people to identify shared goals for conserving dolphin and porpoise species while ensuring that human communities prosper.*



The franciscana dolphin (*Pontoporia blainvillei*) was a focal species of the workshop, sparking discussions on social engagement, sustainability, and small cetacean conservation. (Photo credit: © Marta Cremer)

## Introduction

According to the most recent International Union for Conservation of Nature (IUCN) status evaluations, a total of 134 whale, dolphin, and porpoise (cetacean) species, subspecies, and subpopulations are currently recognized, of which 24 are considered to be “Critically Endangered” (CR) and 25 “Endangered” (EN) (IUCN – Species Survival Commission [SSC] Cetacean Specialist Group, 2022). The situation is particularly desperate for riverine and coastal species; of the seven dolphin and porpoise species/subspecies living in freshwater habitats, three are classified as “Critically Endangered” and four as “Endangered” (Wang et al., 2015; Minton et al., 2017; da Silva, et al., 2018a, 2018b; Braulik et al., 2019).

During the last few decades, this negative trend could not be reversed for most species using typical “fisheries management” approaches such as gear modifications, gear restrictions, time/area closures, and human or technological observer programs and monitoring. Despite intensive efforts to help these species in their natural habitat through such *in situ* conservation measures, declines in the affected populations have continued. The Yangtze river

dolphin (baiji; *Lipotes vexillifer*) has gone extinct, and the vaquita porpoise (*Phocoena sinus*) is on the brink of extinction. It should also be noted that the ranges of most of these species are in countries where societal conditions of poverty and corruption make conservation policies less of a priority and more difficult to implement. Often, stakeholders involved have fewer opportunities and societal supports to adopt new practices or to implement new technologies. Consequently, many communities prioritize basic human needs over conservation. Traditional top-down conservation regulation approaches often only alienate stakeholders and create a more difficult and antagonistic environment in which to conduct conservation projects.

In response to this reality, the ESOCC (*Ex Situ* Options for Cetacean Conservation) Workshop was organized in 2018 (Taylor et al., 2020). At the ESOCC Workshop, seven dolphin and porpoise species, later joined by the Lahille’s dolphin (*Tursiops truncatus gephyreus*), a bottlenose dolphin subspecies (Committee on Taxonomy, 2023), were identified as representative of the threats also affecting many other small nearshore



Lahille’s bottlenose dolphin (*Tursiops truncatus gephyreus*) is one of the few small cetaceans that actively interacts with fishermen in cooperative fishing. Such events are extremely rare in the world. Cooperative fishing with Lahille’s dolphins is limited to a few places in southern Brazil. (Photo credit: © Fabio Daura Jorge)

cetaceans. Their plight epitomizes the situation for other dolphin and porpoise species and subspecies vulnerable to extinction. The aim of the ESOCC Workshop was not only to review their conservation status, but, more importantly, to find out what contribution the full range of *ex situ* measures (including rescues, translocations, health assessments, medical treatments, and rehabilitation) might play in their future preservation.

Integrated conservation planning, also known as the “One Plan Approach” was developed by the IUCN SSC’s Conservation Planning Specialist Group (CPSG; Byers et al., 2013; CPSG, 2014). This integrated approach not only involves consideration of all potential *in situ* and *ex situ* measures but also promotes inclusion of a risk-averse cost/benefit analysis, transparency, and participation of a diverse set of stakeholders from the very beginning of the assessment, conservation planning, and implementation process.

The importance of the One Plan Approach as a conservation framework was recognized by the 2018 ESOCC Workshop. Recommendations from that workshop led to the development of *priority projects*, including fundraising for and

collaboration with a number of range-country partners. The projects focus on conservation actions for some of the most threatened small cetacean species, including Atlantic humpback dolphins (*Sousa teuszii*), Indus River dolphins (*Platanista gangetica minor*), Yangtze finless porpoises (*Neophocaena asiaeorientalis* ssp. *asiaeorientalis*), and franciscana dolphins (*Pontoporia blainvillei*).

Among the most prominent recommendations from the ESOCC Workshop were (1) to expand cetacean conservation planning efforts to focus on improved communication, (2) to identify individual stakeholder and community needs, (3) to increase awareness by involving individuals and communities, and (4) to incorporate mechanisms to address the many human dimensions of wildlife conservation (Taylor et al., 2020).

Integration of the human dimensions of conservation has not been a prominent component of most descriptions of the One Plan Approach. Herein, we encourage the broader inclusion of the social science-based skills and tools that can enhance both *in situ* and *ex situ* conservation efforts as a core part of the One Plan Approach for integrated conservation planning.

## The Human Dimensions of Small Cetacean Conservation

Historically, species conservation has been a discipline dominated by natural scientists. Their knowledge has become the basis of species conservation through evaluating population fluctuations, identifying threats, and ultimately proposing conservation measures based on these observations and focused on addressing the needs of endangered species. Also historically, true integration of and sufficient emphasis on all the human dimensions of conservation has been underemphasized. The introduction of the journal *Human Dimensions of Wildlife* in 1996, under the editorship of Michael Manfredo and Jerry Vaske (for a summary, see Manfredo, 2008), brought new momentum to the field. The editors asserted that wildlife conservation could be optimized through a better understanding of the social complexity of wildlife issues. Since then, the field of human dimensions of wildlife conservation has fundamentally been understood as one that focuses on how people’s knowledge, values, and behaviors influence and are affected by decisions about wildlife conservation and management of natural resources.

Applying tools, methods, and approaches from social science disciplines provides a great opportunity to better understand the root problems of biodiversity loss. Because environmental problems

involve many human factors, conservation biologists need to be aware of the contribution of the social sciences and to be trained in the related concepts and techniques involved in the conservation of natural resources. This might require that conservation biologists learn new skill sets and/or include experts in social sciences along with representatives from relevant agencies as part of their conservation team. Without the expertise in how to recognize and respond to critical human dimensions considerations, we run the risk of jeopardizing the credibility and respectability of conservation programs. We also would risk operating in a dangerous vacuum that isolates us from local communities, politicians, economists, health workers, educators, and other key players involved in conservation actions. Local people living in and around where a conservation project operates will be present long after such interventions have come to a close, and they therefore will determine the success of any intervention. Failing to address the relevant human needs makes failure of conservation efforts much more likely.

Wherever conflicts between wildlife and people occur, all sides must be considered: the interests of the species, the interests and culture of the people who live there, and the resultant economic

circumstances. Sustainable species conservation is most likely to be achieved when this “triple bottom line” can be maximized. It should be noted that ideas about economic values and nature are not universal, and that there are also divergent ideas about the roles and values attached to concepts such as ecosystem services. These do not necessarily coincide with simple economic models attempting to quantify the value of ecosystem services, for example. In addition, both the loss of biodiversity and many of the conservation actions that have followed have their roots in colonialism and industrialization, which have harmed both people and nature. It is important to work closely with communities both as critical long-term stakeholders and as essential collaborators to ensure that existing social and economic misunderstandings and environmental injustices are addressed.

Ultimately, it is important to note that all conservation measures involving people are intended to achieve a very specific goal, which is often a change in the behavior of humans. As Schultz (2011) aptly puts it in his article “Conservation Means Behavior,” conservation biologists, in particular, need to draw on the expertise of other disciplines to ultimately achieve this goal. There is a fundamental link between conservation and human behavior, with a particular need for skills such as those involved in disciplines as varied

as economics, politics, sociology, anthropology, communication, marketing, and psychology.

Goal #1 of the Society for Conservation Biology Social Science Working Group’s *2015 Strategic Plan* is to “advance scientific understanding of conservation as a social process” (p. 4). Their rationale for this was spelled out clearly:

*The field of conservation, and the organizations that represent it, have been rooted largely in the natural sciences. Only within the last generation have we begun to recognize the extent to which conservation is a social process, designed and carried out by people, with effects on both people and nature. Recognizing that conservation is about people as much as it is about species or ecosystems suggests a paradigm shift in the nature and use of science in conservation. Social science theories, analytic tools, and established knowledge can make a vital contribution to conservation success. Moreover, because biodiversity conservation is a widespread social phenomenon, conservation research by social scientists can provide insights into human society generally. Thus, advancing scientific understanding of conservation as a social process is a means both to preserve the earth’s natural heritage and enhance our understanding of ourselves. (p. 4)*



Incorporating the human dimension has played a crucial role in efforts to save the golden lion tamarin (*Leontopithecus rosalia*), an endangered primate species native to Brazil. (Photo credit: © Luis Paulo Ferraz)

Based on the above, it has become evident that the natural sciences alone cannot address the complexity of the problem. Without a broad transdisciplinary approach focused on addressing the human dimensions, conservation measures will be less likely to succeed. This approach has already been successfully incorporated into the conservation of various terrestrial animal species (Stolwijk, 2013) and is also increasingly envisaged for future conservation actions. For example, providing recommendations for managers, researchers, and practitioners to recognize the central role of human dimensions has facilitated and improved the likelihood of successful reintroduction of endangered bird species (Martins et al., 2022) and the mitigation of human-wildlife conflict involving a variety of species (IUCN SSC, 2023).

With this premise in mind, our December 2022 workshop was planned to expand the integrated species conservation/One Plan Approach (Byers et al., 2013) by including experts from a wide diversity of disciplines into the discussion about improving the conservation of riverine and near-shore cetaceans. The goal for this workshop was to discuss how to apply human dimensions considerations in both *in situ* and *ex situ* settings when planning and implementing conservation measures for these cetaceans by placing communities as central to the process. This transdisciplinary approach included expertise from a wide variety of social science disciplines. The workshop participants hoped that through this transdisciplinary approach, the future prospects for the cetacean species, the human communities involved, and the local economy would all improve.

## The Transdisciplinary Approach

**To do justice to all sectors, experts from the following disciplines participated in the 2022 workshop:**

### ***Cetacean Field Biology and Conservation Biology***

Specialists in dolphin population studies, abundance estimation, fluctuations/changes over time, threat analysis, design, and implementation of protective measures

### ***Social Psychology***

Specialists in conservation psychology and social psychology applied to wildlife conservation to maximize community support and engagement in conservation projects

### ***Human-Wildlife Conflict/Coexistence***

Specialists in human-wildlife conflicts, managing conflicts, and developing coexistence measures

### ***Community Engagement/Communications***

Specialists with experience in directly addressing the human dimensions of species conservation

### ***Human Dimensions Within Multi-Species Conservation***

Specialists that work in developing and disseminating the concepts and practice of integrated species conservation and encouraging adoption of effective species conservation planning approaches worldwide

### ***Economics/Ecosystem Services***

Specialists in the area of economics or working on ecosystem services

## Outcome of Workshop Discussions

Workshop participants emphasized the urgent need for an inclusive, participatory approach to small cetacean conservation. The *in situ* measures implemented to date have been insufficient to halt the steady decline of many populations. Potential use of the full range of *ex situ* measures outlined in the *ex situ* guidelines (CPSG, 2014) should also be complemented with incorporation of social science tools and techniques for addressing human factors and concerns.

During the workshop, examples that show how the involvement of local people and different stakeholders in both *in situ* and *ex situ* settings have facilitated conservation successes were presented. Particularly helpful were cases where conservationists and communities worked together to change the behavior of people who formerly contributed to a conservation challenge, where their involvement in identifying and addressing the underlying issues instead transformed their role to becoming part of the solution.

There was consensus that careful assessment of the conservation status of a species and the accompanying threat analysis are still the basis on which conservation decisions should be made. However, deciding how best to address direct human threats to the survival of the species is an idiosyncratic process that must necessarily be focused on promoting human behavioral change and be developed on a case-by-case basis. This may require the involvement of psychologists, biologists, sociologists, government representatives, or others, along with stakeholders, as specific conditions dictate. When and how to involve these different disciplines will typically be the task of those developing conservation measures in consultation with the primary stakeholders. Ultimately, the specific solutions, tools, disciplines, and timelines will need to be co-created and co-designed in collaboration with local communities.

A concrete outcome of the workshop was the draft of a “toolbox” with a range of actions for use in the design of effective conservation plans in collaboration with local communities. Developing a customized toolbox (see Figure 1) with a set of actions that effectively incorporate human dimensions considerations into the design of a species conservation plan is critical to the success and sustainability of conservation actions proposed in the plan. Workshop participants agreed that in such efforts it was important to bring together a better understanding of the needs and concerns of local communities, stakeholders, and policymakers for consideration along with biological data.

Here are some essential components and activities to include in this toolbox:

1. **Identify relevant stakeholders:** Identify and engage all relevant stakeholders such as local communities, nongovernmental organizations (NGOs), government agencies, scientists, and industries.
2. **Facilitate collaboration and partnerships:** Promote collaboration between different stakeholders, including NGOs, government agencies, research institutions, and local communities. Through these partnerships, resources, expertise, and knowledge can be pooled to achieve more effective conservation outcomes.
3. **Promote community-based conservation:** Involve local communities in decision-making processes and share responsibilities from the very start of the project. Center communities as leaders within conservation approaches.
4. **Recognize local knowledge:** The local knowledge of indigenous and local communities helps to develop more holistic and culturally appropriate conservation strategies. Decisionmakers should incorporate traditional ecological knowledge into conservation planning and decision-making processes.
5. **Conduct social assessments:** Understand people’s behaviour and attitudes towards wildlife and species conservation through surveys/interviews. This information will help to better tailor conservation plans to also address the needs and values of local people.
6. **Perform economic valuation:** Understand the economic value of the ecosystem services generated by the species and habitats to be conserved. Demonstrating the local and regional economic benefits of conservation can gain the support of policymakers and businesses.
7. **Develop strategies to prevent/mitigate conflicts:** Manage conflicts between conservation objectives and human activities such as fisheries. Adaptive management strategies should be sought to limit or avoid frustration.



**IDENTIFY RELEVANT  
STAKEHOLDERS**



**FACILITATE COLLABORATION  
AND PARTNERSHIPS**



**PROMOTE COMMUNITY-  
BASED CONSERVATION**



**RECOGNIZE LOCAL  
KNOWLEDGE**



**CONDUCT SOCIAL  
ASSESSMENTS**



**PERFORM ECONOMIC  
VALUATION**



**DEVELOP STRATEGIES TO  
PREVENT/MITIGATE CONFLICTS**



**DEVELOP A MONITORING  
AND EVALUATION MATRIX**



**DEVELOP EDUCATION AND AWARENESS-  
RAISING CAMPAIGNS, SOCIAL MARKETING  
STRATEGIES, AND INCENTIVE MECHANISMS**



**FACILITATE LEGISLATIVE,  
REGULATORY, AND  
GOVERNMENTAL APPROACHES**

**Figure 1.** Essential components of the “toolbox”

8. **Develop a monitoring and evaluation matrix:** Establish a robust monitoring and evaluation system to track the progress of conservation actions and measure their impact on species and human well-being.
9. **Develop education and awareness-raising campaigns, social marketing strategies, and incentive mechanisms:** Develop education programs to raise awareness among local communities and the general public about the importance of species conservation and the accompanying benefits. In parallel, economic and social incentive mechanisms should be developed to motivate local communities to actively participate in conservation actions.
10. **Facilitate legislative, regulatory, and governmental approaches:** These are often critical to species conservation efforts and enforceable only if appropriate attention is paid to social, psychological, and economic factors. These approaches often involve the development and implementation of laws, regulations, and policies that take into account both the species' ecological needs and the socioeconomic realities of human communities.

Incorporating the human dimension into species conservation plans is expected to create a more inclusive, effective, and sustainable solution that benefits both wildlife and local communities. It is important to note that each conservation context is unique; therefore, this toolbox needs to be continuously reviewed for effectiveness and adapted to each specific situation.

Participants also agreed that there were many commonalities shared by the eight ESOCC priority species—not only in terms of habitat, but also in relation to the main threat: unsustainable fishing practices. Although theoretical approaches are of great importance, an attempt was made to keep the focus on practical implementation, considering the needs and priorities of the different local stakeholders.



Exploring the toolbox of solutions: workshop participants gather to define key tools for small cetacean conservation. (Photo credit: © Luisa Rauenbusch, Nuremberg Zoo)



## Conclusions and Recommendations

The workshop participants agreed on the following conclusions and recommendations:

1. Small cetacean conservation programs rarely take human dimensions considerations into account. The protection of these species has predominantly centered around solutions derived from the natural sciences domain.
2. To incorporate different perspectives, the conservation of small cetaceans should follow a more equitable and inclusive approach in which conservationists, government representatives, community members, and other stakeholders are engaged. The conservation measures should definitely consider and address the needs and perspectives of a range of stakeholders.
3. Special attention should be paid to identifying stakeholders, including the implementation of stakeholder analysis techniques to understand the social landscape in which the conservation intervention is happening or will happen. Successfully identifying which groups should be addressed, their receptivity to change, and what role they should play is critical for success. Ideally, local stakeholders and conservationists will co-create approaches that produce direct benefits to the communities and economies where the conservation project occurs.
4. We must promote the application of human dimensions considerations in cetacean conservation within the natural sciences-dominated conservation community. To this end, it is essential to familiarize this community with the concepts and their implementation. There is still a need to explain and implement the original, primarily biologically focused, IUCN One Plan Approach among the marine mammal scientific community, let alone what we herein advocate involving addressing the human dimensions.
5. Education and public awareness are crucial components of conservation efforts as they can help to change attitudes and behaviors towards conservation. However, education alone is not enough. When combined with calls to action and an emphasis on cultivating behavioral change, education can enhance conservation success.
6. Every conservation issue is unique, and people's needs change constantly. Therefore, it is important to recognize that human-focused actions, as summarized within our toolbox, are dynamic and need to be continuously assessed for their effectiveness and value. A one size fits all template does not work. Instead, we need a flexible and responsive toolbox. Each cetacean conservation project and likely each of the communities across the range of each cetacean species will require different tools and approaches to achieve success.
7. The workshop concluded with a call for increased efforts in research, education, and implementation to further develop methods to address the human dimensions of wildlife conservation.



Mapping the conservation mosaic: a kaleidoscope of ideas generated at the Human Dimensions of Small Cetacean Conservation workshop. Each post-it note represents a unique perspective and a possible solution. (Photo credit: © Frank Cipriano)



Building bridges between knowledge: a dialogue between fishermen and scientists. (Photo credit: © Camilah Antunez Zappes)

## Future Directions

It was recommended that species and subspecies such as the vaquita porpoise, franciscana dolphin, and Lahille's bottlenose dolphin should be used as case studies and analyzed in detail by applying actual and potential social science approaches. In the case of the vaquita, it might be crucial to understand which components of a social science-based approach were not conducted sufficiently or successfully, how these steps might have altered the course of the conservation intervention, and which of these could still be used going forward with the vaquita. The same applies to the franciscana and Lahille's bottlenose dolphins, both of which are cases in which social science conservation components have been applied sporadically and with some degree of success. Best practices may include mapping out the process in detail, showing when and how to draw on different realms of expertise, and demonstrating how these steps might contribute to the overall success of a project.

It was also decided to form a transdisciplinary expert group to be available to accompany and

advise the process of certain small cetacean conservation projects. Many participants of this workshop have already signaled their interest in joining this group of experts from various disciplines.

The workshop concluded by planning a follow-up workshop for 2025 in Brazil. During this next workshop, the different approaches used to incorporate human dimensions considerations into conservation plans and measures in ongoing franciscana conservation projects will be reviewed and analyzed. All stakeholders—including politicians—will be invited to this meeting. The meeting will serve to integrate the existing knowledge from the social sciences into the ongoing conservation project—not only to propose improvements but also to better define the limitations of such measures. It is also important to recognize the research potential that exists in a novel project that stretches from the design of new measures to their implementation, including front-end, formative, and summative evaluations.

## Acknowledgments

This report is the culmination of the collective efforts, insights, and enthusiasm of 42 participants (see p. 270) from a range of disciplines who attended the Workshop on the Human Dimensions of Small Cetacean Conservation. Although written by six individuals, this report reflects the shared knowledge and diverse perspectives of all who contributed to the discussions and conversations during the workshop.

We would like to thank each of the participants for their invaluable input and passion for the topic. Their contributions have been instrumental in shaping this report. Without their commitment, it would not have been possible to bring this work to fruition. Thank you all for your commitment to the conservation of small cetaceans. We are grateful for the opportunity to work with such a talented and passionate group of people.

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