DECLARATION OF SENTIENCE IN CRUSTACEANS

alianima

Published on December 1, 2025.

Shrimps and other crustaceans are invertebrate animals widely used in various activities, including commercial fishing, aquaculture, and scientific research. Approximately 440 billion shrimps are farmed annually worldwide, representing more than five times the total production of all terrestrial animals combined[1]. Furthermore, considering wild capture fisheries, it is estimated that between 7.6 and 76 trillion shrimps in general are slaughtered each year[2]. However, shrimps often do not receive the same moral consideration as vertebrate animals regarding their capacity to feel pain and experience suffering.

Sentience refers to the capacity to subjectively experience basic emotions such as pain, fear, and discomfort, as well as to perceive and distinguish internal states as positive or negative[3]. In other words, it is the ability to feel, understand, or perceive something through one's own senses[4]. This concept is crucial to animal welfare science because it implies that sentient beings can experience suffering, justifying the need for their protection and proper care. Sentience is not limited to vertebrates; it also applies to many invertebrates, including crustaceans like shrimps.

There is a significant gap between public perception of shrimp sentience and scientific evidence. Besides being phylogenetically distant from humans compared to other mammals, these animals neither produce vocalizations nor display facial expressions—traits that strongly influence human empathy. Nevertheless, despite remaining scientific gaps, neuroanatomical, pharmacological, and behavioral evidence consistently supports their capacity to respond to pain[5].

Crustaceans possess a nervous system capable of detecting and responding to potentially harmful stimuli, such as excessive heat[6] or electric shocks[7],[8]. They show behavioral, anatomical, and physiological indicators of a sophisticated pain system[9]. Evidence consistent with the presence of nociceptors[6],[8],[10] and complex behavioral responses to noxious stimuli—such as self-grooming or rubbing the affected area—are examples of this[8],[11],[12]. Besides shrimp, other crustaceans have exhibited similar behaviors and responses to painful stimuli[13],[14].

In other experiments, it has been demonstrated that altered complex behaviors in response to painful stimuli can be reduced when animals are anesthetized[8],[11]. Multiple studies report other behavioral and physiological changes in some crustaceans, including long-term effects, when exposed to harmful and painful stimuli, such as stress, avoidance learning, or the shedding of a severely affected limb (autotomy)[15],[16].

Science also provides evidence that these animals display complex cognitive abilities involving object and color discrimination, sound production and perception, individual recognition, complex learning, memory, spatial perception, decision-making behavior, parental care, and even possible distinct personalities[9],[15],[17]. Additionally, from an evolutionary perspective, the capacity to feel and respond to harmful stimuli enhances

species survival, making it reasonable that this trait is widespread among many animal groups, including invertebrates.

Thus, the debate about the sentience of these animals is extremely relevant for developing public policies and ethical practices that promote humane handling, minimizing their suffering during capture, production, transport, and slaughter processes. Although the World Organisation for Animal Health (WOAH) does not provide specific welfare recommendations for crustaceans such as shrimps, it brings guidelines addressing health and management aspects of aquatic animals in its Aquatic Animal Health Code[18]. It is important to note that several well-established organizations worldwide—such as the Royal Society for the Prevention of Cruelty to Animals (RSPCA), the British Veterinary Association, and the Universities Federation for Animal Welfare (UFAW)—have begun considering the welfare of aquatic invertebrates, including shrimps[16].

Proper treatment of crustaceans like shrimps not only improves their welfare but should also contribute to the quality of the final product, yielding economic and ethical benefits for producers and society. Therefore, I hereby declare my agreement with the statement that crustaceans such as shrimps are sentient beings. Recognizing them as such entails the duty to act to prevent avoidable suffering and to promote their health and welfare. This recognition is essential to raise public awareness and guide scientific, legislative, and economic policies regarding the proper management of these animals.

"The question is not, 'Can they reason?' nor, 'Can they talk?' but rather, 'Can they suffer?'" – Jeremy Bentham (1789).

The following professionals, whose roles and institutional affiliations indicated below correspond to those held at the date of this publication, sign this Declaration on the date of its publication:

1. **Ana Carolina dos Santos Gauy**
   Biologist and Researcher at Unesp/Ibilce

2. **Ana Paula de Oliveira Souza**
   Veterinarian and Animal Welfare Specialist at Alianima

3. **Ana Silvia Pedrazzani**
   Veterinarian and CEO at Wai Ora

4. **Anne Elise Landine Ferreira**
   Biologist and Researcher, Postdoctoral Fellow at UFJF

5. **Becca Franks**
   Animal Welfare Scientist and Assistant Professor at New York University

6. **Bruno Gonçalves**
   Professor at the State Secretariat of Education of Goiás

7. **Carla Forte Maiolino Molento**
   Veterinarian and Full Professor at the Federal University of Paraná (UFPR)

8. **Caroline Marques Maia**
   Biologist, Fish Expert at Alianima and Researcher at fair-fish

9. **Catalina Lopez**
   Veterinarian and Director of the Aquatic Animal Alliance at the Aquatic Life Institute

10. **Daniel Santiago Rucinque**
    Veterinarian and Technical Consultant at FWS Consultoria

11. **Eliane Gonçalves de Freitas**
    Biologist and Senior Lecturer at São Paulo State University (UNESP)

12. **Fausta Borsani**
    Economical Agronomist and Executive Director at fair-fish International

13. **Giovana Vieira**
    Veterinarian and Animal Welfare Scientist at The Humane League

14. **Haven King-Nobles**
    NGO Worker and Executive Director at Fish Welfare Initiative

15. **Ida Bergendahl**
    Researcher and Environmental Analysis Specialist at the Swedish University of Agricultural Sciences

16. **Jenny Volstorf**
    Science Author and Director of the fair-fish database

17. **João Favero**
    Animal Scientist and Academic Support Assistant at São Paulo State University

18. **João Saraiva**
    Biologist

19. **Julia Seibel**
    Advertising Professional and Head of Corporate Engagement at the Aquatic Life Institute

20. **Leonardo José Gil Barcellos**
    Veterinarian and Full Professor (Level III) at the University of Passo Fundo

21. **Lynne Sneddon**
    Professor at the University of Gothenburg

22. **Marisa Fernandes de Castilho**
    Associate Professor (Level IV) at the Federal University of Paraná (UFPR)

23. **Maria Fernanda Martin Guimarães**
    Animal Scientist and Animal Welfare Manager at Alianima

24. **Murilo Henrique Quintiliano**
    Animal Scientist at FAI Farms

25. **Paolo Panizzon**
    Researcher at fair-fish

26. **Patricia Tatemoto**
    Biologist and Postdoctoral Fellow at the University of São Paulo

27. **Patrycia Sato**
    Veterinarian and PhD in Farm Animal Welfare, President and Technical Director at Alianima

28. **Pedro Henrique Esteves Trindade**
    Assistant Professor at Michigan State University

29. **Percilia Giaquinto**
    Lecturer and Director at UNESP

30. **Rodrigo Egydio Barreto**
    Biologist and Associate Professor at UNESP

31. **Steffan Edward**
    Animal Scientist and Animal Welfare/Certification Specialist at the Aquatic Life Institute

32. **Tássia Oliveira Biazon**
    Biologist and Professor at SESI

33. **Tavani Rocha Camargo**
    Biologist and Research Director at SAMPLE Consultancy

34. **Vinícius Nunes Alves**
    Biologist, Master in Ecology, and Science Teacher at the Municipal Secretariat of Education, Botucatu City Hall

35. **Yannick Rohrer**
    Fish Welfare Project Manager with a Focus on Practical Application at fair-fish

References

1. Shrimp Welfare Project [Internet]. Available from: https://www.shrimpwelfareproject.org/

2. Waldhorn DR, Autric E. Shrimp: The Animals Most Commonly Used and Killed for Food Production. San Francisco (CA): Rethink Priorities; 2023. Volume 37.

3. Volpato GL, Gonçalves-de-Freitas E, Fernandes-de-Castilho M. Insights into the concept of fish welfare. Dis Aquat Organ. 2007;75:165–71.

4. SENCIÊNCIA. In: Dicio, Dicionário Online de Português [Internet]. Porto: 7Graus; 2020 [cited 2025 Apr 14]. Available from: https://www.dicio.com.br/trabalho/

5. Rowe A. Should scientific research involving decapod crustaceans require ethical review? J Agric Environ Ethics. 2018;31:625–34.

6. Puri S, Faulkes Z. Can crayfish take the heat? Biol Open. 2015;4:441–8.

7. Elwood RW, Appel M. Pain experience in hermit crabs? Anim Behav. 2009;77:1243–6.

8. Birch J, Burn C, Schnell A, Browning H, Crump A. Review of the evidence of sentience in cephalopod molluscs and decapod crustaceans [Internet]. London: LSE Consulting, LSE Enterprise Ltd.; 2021 [cited 2025 Apr 14]. Available from: https://www.lse.ac.uk/News/News-Assets/PDFs/2021/Sentience-in-Cephalopod-Molluscs-and-Decapod-Crustaceans-Final-Report-November-2021.pdf

9. Broom D. Cognitive ability and sentience: Which aquatic animals should be protected? Dis Aquat Organ. 2007;75:99–108.

10. Kasiouras E, Hubbard PC, Gräns A, Sneddon LU. Putative nociceptive responses in a decapod crustacean: the shore crab (Carcinus maenas). Biology. 2024;13:851.

11. Barr S, Laming PR, Dick JT, Elwood RW. Nociception or pain in a decapod crustacean? Anim Behav. 2008;75:745–51.

12. Barr S, Elwood RW. The effects of caustic soda and benzocaine on directed grooming to the eyestalk in the glass prawn, Palaemon elegans, are consistent with the idea of pain in decapods. Animals. 2024;14:364.

13. Dyuizen IV, Kotsyuba EP, Lamash NE. Changes in the nitric oxide system in the shore crab Hemigrapsus sanguineus (Crustacea, Decapoda) CNS induced by a nociceptive stimulus. J Exp Biol. 2012;215:2668–76.

14. Barr S, Elwood RW. Effects of acetic acid and morphine in shore crabs, Carcinus maenas: implications for the possibility of pain in decapods. Animals. 2024;14:1705.

15. Gherardi F. Behavioural indicators of pain in crustacean decapods. Ann Ist Super Sanità. 2009;45(4):432–8.

16. Elwood RW. A history of pain studies and changing attitudes to the welfare of crustaceans. Animals. 2025;15:445.

17. Valente CS. Rethinking sentience: Invertebrates as worthy of moral consideration. J Agric Environ Ethics. 2024;38(3).

18. World Organisation for Animal Health (OIE). Aquatic Animal Health Code [Internet]. 26th ed. 2024 [cited 2025 Apr 14]. Available from: https://www.woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access/