

Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our [Editorial Policies](#) and the [Editorial Policy Checklist](#).

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed
☐	☒ The exact sample size (<i>n</i>) for each experimental group/condition, given as a discrete number and unit of measurement
☒	☐ A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒ The statistical test(s) used AND whether they are one- or two-sided <i>Only common tests should be described solely by name; describe more complex techniques in the Methods section.</i>
☐	☒ A description of all covariates tested
☐	☒ A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☐	☒ For null hypothesis testing, the test statistic (e.g. <i>F</i> , <i>t</i> , <i>r</i>) with confidence intervals, effect sizes, degrees of freedom and <i>P</i> value noted <i>Give P values as exact values whenever suitable.</i>
☒	☐ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☐	☒ Estimates of effect sizes (e.g. Cohen's <i>d</i> , Pearson's <i>r</i>), indicating how they were calculated

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection	primary household survey data collection; conducted by authors
Data analysis	R-programming; full analysis code submitted together with revised manuscript

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our [policy](#)

The data that support the findings of this study are available from Duke University, but restrictions apply to the availability of these data, which were used under licence for the current study and so are not publicly available. The data are, however, available from the authors upon reasonable request and with the permission of Duke University.

Research involving human participants, their data, or biological material

Policy information about studies with [human participants or human data](#). See also policy information about [sex, gender \(identity/presentation\), and sexual orientation](#) and [race, ethnicity and racism](#).

Reporting on sex and gender	We conduct a distributional impact evaluation analysis of MPAs on socio-economic welfares of coastal villagers. We report impacts across multiple demographic groups including male and female-headed households.
Reporting on race, ethnicity, or other socially relevant groupings	Beside gender, the other demographic subgroups we consider includes ethnicity (adat vs. non-adat households) and age groups.
Population characteristics	We present descriptive statistics of objective and subjective economic welbeings for each of the population subgroups discussed above.
Recruitment	Our study employs a large monitoring dataset capturing social and ecological conditions before and after the implementation of ten MPAs in Eastern Indonesia, encompassing over 10,000 household surveys within 180 characteristically similar treated (MPA) and control (non-MPA) coastal settlements between 2010 to 2017. Our survey method uses a coarse-matching procedure to identify settlements outside a specific MPA boundaries with a high probability of containing a similar socio-demographic composition of households to those within that in the MPAs prior to the MPA intervention. We identified a comparable group of counterfactual settlements with residents that were similar to those within treated settlements in each MPA based on several pre-treatment social dimensions discussed in the manuscript.
Ethics oversight	This study was conducted in accordance with the guidelines of the Duke University Institutional Review Board (IRB # 2023-0007) for the analysis of existing data. The original data were collected following best practice ethical guidelines regarding research conduct (National Academy of Sciences 1995; American Anthropological Association 1998).

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☐ Life sciences ☒ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Behavioural & social sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	Quantitative impact evaluation; quasi-experimental analysis
Research sample	The study employs a monitoring dataset capturing social and ecological conditions before and after the implementation of ten MPAs in Eastern Indonesia, encompassing over 10,000 household surveys within 180 characteristically similar treated (MPA) and control (non-MPA) coastal settlements between 2010 to 2017.
Sampling strategy	The sampling method uses a coarse-matching procedure to identify settlements outside a specific MPA boundaries with a high probability of containing a similar socio-demographic composition of households to those within that in the MPAs prior to the MPA intervention. We identified a comparable group of counterfactual settlements with residents that were similar to those within treated settlements in each MPA based on several pre-treatment social dimensions discussed in the manuscript.
Data collection	Trained enumerators were hired and physically deployed to survey sites (settlements) to collect household data. The full survey instrument can be found in the official Field Manual (Glew et al. 2012). Mascia, M.B., Pakiding, F. and Glew, L. (2012) Social impacts of marine protected areas: household survey. Version 2.3 World Wildlife Fund & Universitas Negeri Papua, Washington D.C., United States and Manokwari, Indonesia.
Timing	All sampling waves took place between 2010 and 2017
Data exclusions	No data was excluded from the analysis
Non-participation	Refer to the manuscript for details on survey attrition rate.
Randomization	Surveyed households were randomly selected for each control and treated settlements following the predefined sampling methodology

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology and archaeology
☒	☐ Animals and other organisms
☒	☐ Clinical data
☒	☐ Dual use research of concern
☒	☐ Plants

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Plants

Seed stocks

n/a

Novel plant genotypes

n/a

Authentication

n/a