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# Incubator for New Ideas

Beating a path through the complexity jungle: the German Centre for Integrative Biodiversity Research's synthesis centre is piecing together existing knowledge to gain new insights.

Nature is simply much too complex." This is the first, and perhaps the last, answer to the question as to why biodiversity research has produced so few universally valid and globally applicable in-

sights. But how can the study of the diversity of life be taken a substantial step forward? When scientists and politicians began discussing this question 25 years ago, they were starting from a complex position:

biodiversity research was becoming increasingly interdisciplinary and the scales being studied ranged from the microscopic to the global and from milliseconds to millions of years. New technologies were pro-

ducing enormous quantities of data ("big data"), most of it unevaluated, while the huge number of publications made it extremely difficult to form a meaningful overall picture of a given topic. Hopes rested on "synthesis": in other words, instead of collecting new data, analysing and synthesising existing knowledge, data, theories and hypotheses to produce new insights.

An opportunity to do exactly that was provided by iDiv, the German Centre for Integrative Biodiversity Research Halle-Jena-Leipzig, a DFG Research Centre set up in 2012 consisting of a consortium of eleven research institutions in three federal states. The sDiv synthesis centre, a unit within iDiv, is an essential component of this centre and comprises three central instruments: meetings of international working groups and interaction with renowned visiting researchers, sabbaticals, and synthesis projects carried out by resident sDiv postdocs.

This integration of a "centre within a centre" is the essential characteristic that sets sDiv apart from other, isolated synthesis centres. The idea is to create scope for the exchange of ideas between sDiv visiting researchers and iDiv researchers – hence the rule that every sDiv project must include at least one iDiv scientist. So far, approximately 700 researchers from 38 countries have participated in 56 sDiv working group meetings. And the concept is bearing fruit in the form of successful applications for third-party funding and close to 100 scientific publications.

One example of synthesis in practice is sChange, an sDiv working group which deals with the complex process of the change

The German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig was established in 2012 as a DFG Research Centre. In the space of four years it has developed into an internationally visible research institution. iDiv has two missions: to create a scientific foundation for the sustainable management of biodiversity and to establish integrative biodiversity research as a new discipline. In the research team's own view, the unique features of iDiv are theory formation and synthesis across all areas of research, the close interlinking of the sDiv synthesis centre with the active research environment and a network of more than 100 established experts, the iDiv members. iDiv has a global network and offers numerous platforms for biodiversity research. The partners in the consortium provide reciprocal support: three universities (Halle-Wittenberg, Jena, Leipzig), the Helmholtz Centre for Environmental Research and seven non-university research institutions (three Max Planck and four Leibniz institutes). **RU**

in biodiversity ([www.idiv.de/schange](http://www.idiv.de/schange)). Locally we can see both losses and gains, while globally we are losing species. But what is the situation in between, and why? Questions can be answered by pooling or "synthesising" data from different geographical scales and groups of species and analysing it using methods from different research disciplines. This is a characteristic approach of a synthesis working group.

What else makes the sDiv synthesis centre attractive to researchers? It provides an opportunity to work focussed without distractions. But legal requirements and administrative frameworks aren't always adapted to the demands of modern science in Germany. So the iDiv administrative team works closely with the University of Leipzig, for example to find solutions to travel expenses regulations. These solutions could serve as examples of good practice for modern and effective research management in Germany beyond sDiv and iDiv.

Synthesis centres are scientific infrastructures, incubators for new ideas – in a sense they are think tanks and places of inherent horizon scanning. sDiv is part of the International Synthesis Consortium ([www.synthesis-consortium.org](http://www.synthesis-consortium.org)).

The idea of synthesis centres isn't limited to the natural sciences: in years to come, synthesis units could become a feature of other centres of excellence. This would require funding mechanisms that support challenging synthesis work. In biodiversity research, scientific synthesis is what makes it possible to penetrate the fog of complexity and find patterns, answers and solutions to some of the major problems and questions facing science and society.

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