

## Collections Essay

Libraries are tangible stores that document the evolution of human knowledge and some of the patterns and processes of human creativity. The contents are intended to be used contemporarily, but also to persist as permanent descriptive documentation of our activities and existence on the planet. Natural history collections have these same qualities but are so much broader in scope. Natural history specimens are intended to be used contemporarily, but also to persist as permanent physical documentation of the diversity of life on the planet. They also document our knowledge of the life of the planet at any given time in our history. Indeed, they are our absolute source of all information regarding the history of life on the planet and the patterns and processes of the evolution of biodiversity. In this sense they are as much a documentation of non-human factors (biodiversity at any given time) as they are of human endeavors (our knowledge of biodiversity at any given time).

Exploration of the planet on all scales is documented in natural history collections. Darwin's original thoughts as he observed the creatures of the Galapagos Islands are preserved in his written Field Notes and these are accompanied in the British Museum of Natural History by the original specimens he collected and preserved at that time. The same is true of specimens collected by contemporary field biologists working each season in this decade. In each case two things are being preserved and documented: the specimen represents a facet of contemporary biodiversity as the notes and publications of the collector represent a contribution toward human cognizance of our world. The specimens and the knowledge are inextricably linked to one another because the knowledge is based on the specimens and the specimens are permanent physical vouchers of the basis for the original human ideas.

Life on earth is dynamic. It has a history characterized by great changes. Our entire knowledge of life that occurred on the planet before humans began to document our world is based on the physical record of fossils that we may find. The fossil record of pre-human creatures hints at a fantastic diversity of life, but is frustratingly incomplete. The incomplete nature of the fossil record belies the randomness of the phenomenon, both with respect to what is preserved and what we may happen to discover buried in the soil. Natural history collections are human efforts to create a complete and non-random record of the life with which we share the planet. Fossilization also preserves a record of life, but it does so in a random fashion, in stark contrast to the purposefulness of natural history collections assembled by humans.

The great dinosaur fossils that inevitably greet visitors to the world's greatest natural history museums remind us all that life on earth has a dynamic history. Somewhat similarly, we all learned in grade school that the Dodo Bird and the Passenger Pigeon became extinct in the wake of human exploration and exploitation during the last two centuries. We have complete specimens of Passenger Pigeons in museum collections that document both their existence and their unique characteristics that identified them as species unique from all other birds. We have only partial specimens of the Dodo Bird—enough to prove their existence, but insufficient to fully understand their nature. The rest of our knowledge of Dodo Birds comes from somewhat fanciful portraits based on oral descriptions by the Portuguese sailors who hunted them. In other cases, the only record we have is an artistic image left by ancient people.

I have seen an aboriginal painting on a rock cliff near Arnhem Land in northern Australia that clearly depicts the image of an extinct marsupial—a Thylacine, or Tasmanian Wolf. Original notes and collections by English settlers to Australia indicate that this species occurred only on the

island of Tasmania. This image on a rock face on the far side of the Australian mainland clearly suggests that this species once had a larger distribution on the planet and that was contemporaneous with aboriginal cultures. This is intriguing evidence, but still incomplete because we are unlikely to ever know the characteristics of these northerly populations. Were they were different somehow from the Tasmanian populations?

By definition, all species on the planet are unique and each represents a singular piece of the history of life on the planet. Extinction is a natural event in the sense that many species have disappeared without human influence. Nonetheless it is an emotional moment for any field biologist to hold in the hand a specimen of an previously unknown species known only from a miserable remnant of logged forest in Central America whose future is certainly doomed. Field biology today is unlike the great natural history expeditions of 100 years ago. Field biologists today essentially run in front of the bulldozer hoping to scoop up and document biodiversity as quickly as possible before it disappears, and in hopes of discovering its nature and character at a later date.

The fact today is that we do not know how many species occur on the planet and we are a long way from understanding their full nature and history. It is also a fact that more species go extinct each year than we can describe. Species become extinct each year which we never even knew existed. Human nature constantly has us collecting, preserving, documenting and categorizing the world around us. Inasmuch as we are responsible for the present biodiversity crisis, in our natural history collections we are literally documenting our own history as it has altered the flora and fauna of the planet.

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